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# Northeastern University School of Law

## 1974-76 Catalog





# **Northeastern University School of Law**

## **1974-76 Catalog**

Northeastern University  
School of Law  
400 Huntington Avenue  
Boston, Massachusetts 02115  
Tel. (617) 437-3335

## **Operating on the Cooperative Plan**

ETHEL AND REUBEN  
GRYZMISH HALL

SCHOOL OF LAW



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*Equal Opportunity Policy:* Northeastern University is committed to a policy of providing equal opportunity for all. In all matters involving admission, registration, and all official relationships with students, including evaluation of academic performance, the University insists on a policy of nondiscrimination. Northeastern University is also an equal opportunity employer; it is institutional policy that there shall not be any discrimination against any employee or applicant for employment because of race, color, religion, sex, age, or national origin. In addition, Northeastern takes affirmative action in the recruitment of students and employees.

# Academic Calendar

September 1974—May 1976

1974

|                       |                          |
|-----------------------|--------------------------|
| September 3           | Registration             |
| September 4           | Fall Quarter Commences   |
| October 14            | Columbus Day             |
| October 28            | Veterans' Day            |
| November 21–27        | Examinations             |
| November 27           | Fall Quarter Ends        |
| November 28–29        | Thanksgiving Vacation    |
| December 2            | Winter Quarter Commences |
| December 25–January 1 | Winter Vacation          |

1975

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|                |                          |
|----------------|--------------------------|
| February 17    | Washington's Birthday    |
| February 24–28 | Examinations             |
| February 28    | Winter Quarter Ends      |
| March 3–7      | Spring Vacation          |
| March 10       | Spring Quarter Commences |
| April 21       | Patriot's Day            |
| May 26–30      | Examinations             |
| May 30         | Spring Quarter Ends      |
| June 2–6       | Summer Vacation          |
| June 9         | Summer Quarter Commences |
| June 22        | Commencement             |
| July 4         | Independence Day         |
| August 25–29   | Examinations             |
| August 29      | Summer Quarter Ends      |
| September 1    | Labor Day                |
| September 2    | Registration             |
| September 3    | Fall Quarter Commences   |
| October 13     | Columbus Day             |
| October 27     | Veterans' Day            |
| November 21–26 | Examinations             |
| November 26    | Fall Quarter Ends        |
| November 27–28 | Thanksgiving Vacation    |
| December 1     | Winter Quarter Commences |



1976

December 25–January 4

February 16

February 23–27

February 27

March 1–5

March 8

April 19

May 24–28

May 28

Winter Vacation

Washington's Birthday

Examinations

Winter Quarter Ends

Spring Vacation

Spring Quarter Commences

Patriot's Day

Examinations

Spring Quarter Ends

# Faculty

John C. O'Byrne, *Dean and Professor of Law*; A.B., M.S., Syracuse University; LL.B., (J.D.), Harvard University

Donald H. Berman, *Professor of Law*; A.B., LL.B., LL.M., Harvard University

Frederick L. Brown, *Associate Professor of Law*; A.B., LL.B., Harvard University

Judith Olans Brown, *Associate Professor of Law*; A.B., Mount Holyoke College; LL.B., Boston College

Thomas P. Campbell, Jr., *Professor of Law*; A.B., Brown University; LL.B., University of Virginia

Richard A. Daynard, *Professor of Law*; A.B., M.A., Columbia University; LL.B., Harvard University

Charles L. Field, *Assistant Librarian and Assistant Professor of Law*; A.B., Harvard University; M.S., Simmons College; J.D., Suffolk University

John G. S. Flym, *Associate Professor of Law*; B.S., Columbia University; LL.B., Harvard University

Daniel J. Givelber, *Professor of Law*; A.B., LL.B., Harvard University

Robert W. Hallgring, *Professor of Law*; A.B., Princeton University; LL.B., Harvard University

Thomas J. O'Toole, *Edwin B. Hadley Professor of Law*; A.B., M.A., LL.B., Harvard University (on leave 1974–75)

Philip A. Putnam, *Law Librarian and Professor of Law Emeritus*; LL.B., Northeastern University School of Law

Daniel C. Schaffer, *Professor of Law*; A.B., LL.B., Harvard University

Stephen N. Subrin, *Professor of Law*; B.A., LL.B., Harvard University

Rajinder S. Walia, *Law Librarian and Professor of Law*; B.S., Punjab University; M.S., Simmons College; LL.B., LL.M., Delhi University; LL.M., Harvard University

Zipporah B. Wiseman, *Associate Professor of Law*; B.A., McGill University; LL.B., Yale University



## Part-time Lecturers

Albert P. Zabin, *Lecturer-in-Law*; B.A., Brandeis University; LL.B., Harvard University

Norman S. Zalkind, *Lecturer-in-Law*; B.S., Boston College; LL.B., Boston University

## Administrative Staff

Barbara F. Burke, *Executive Assistant to Dean and Director of Placement*

Linda M. Federico, B. S., *Assistant to the Registrar*

Molly T. Geraghty, B.A., LL.B., *Assistant Dean and Director of Cooperative Legal Education*

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Marianne F. Radziewicz, *Registrar and Director of Admissions*

Shirley J. Ramsey, *Administrative Secretary to Dean*

Ellen Wayne, B.S., M.Ed., *Assistant Director of Cooperative Legal Education*

Marie Williams, A.A., *Administrative Assistant for Permanent Placement*

## Library Staff

Evelyn A. Berman, A.B., M.S., *Cataloger*

Alice Coulson, B.A., M.S., *Acquisitions Librarian*

Elaine E. Linehan, B.S., *Library Specialist*

Karl Lurix, A.B., *Library Specialist*

# Purpose

The purpose of the Northeastern University School of Law is to train lawyers to meet the challenges and obligations cast upon the legal profession by contemporary society. The School was founded on the conviction that traditional legal education inadequately attains this goal and that a law school program must match the pace of change in the world and national scene.

The most frequently remarked shortcoming of traditional law school training is the neglect of the practical side of a lawyer's work. The consequence is that newly graduated students are poorly equipped to pursue their profession until they have served a period of apprenticeship. In this respect, they suffer in comparison with their contemporaries who enter other professions.

8 Even more serious is the failure of law school curricula to reflect a genuine concern for the urgent problems of American society. Although this society leans heavily upon lawyers for solutions to its social, economic, and political problems, the usual training afforded by a conventional curriculum does not equip the lawyer for these tasks. To a remarkable degree, the traditional course of studies appears to be based upon the narrow assumption that most law school graduates enter very large law firms where they are likely to work chiefly on the problems of large corporations and financial institutions. Large segments of the curriculum are devoted to these problems, and some of the most pressing questions of this age are often neglected or are examined by only a handful of students in an elective seminar.

To remedy these deficiencies, the School of Law has adopted certain innovations. The most evident of these is the use of the Cooperative Plan of Education to ensure that each student will acquire a significant amount of genuine experience in a law office before receiving a law degree. The Cooperative Plan has been used extensively in other fields of learning, and its adaptation to a program of legal studies adds realism and excitement to what has formerly been an excessively academic preparation for the bar.

The curriculum of the School is designed to provide a solid and relevant legal training for service throughout the country in large and small private law firms, corporations, public legal agen-

cies, and government agencies. The law as it is, and as it should be, is the concern of all lawyers wherever they may serve.

Examination of contemporary issues in the light of existing law brings students to their highest development of understanding of the society in which they live, initiates them in the difficulty and complexity of modern legal and social problems, and provides them with a challenging legal education. No matter what career goal a student chooses, modern legal education offers superior training in approaching problems with resourcefulness and imagination.

The cooperative educational program enriches classroom study by exposing students to reality. Of all the professional disciplines, none demands a strong sense of reality more urgently than does law. Using the actual practice of law as its laboratory, the School adds depth to the curriculum by balancing academic instruction with current experience in the varied aspects of lawyers' worlds. Thus, the understanding of legal theory is enhanced by the understanding of the law in action.

## History

Northeastern University has a long tradition of legal education. Indeed, the University traces its origin to classes in law which were begun in 1898. For nearly 60 years the Law School produced lawyers who achieved distinction at the bar and on the bench.

The original emphasis was on evening education, the University conceiving its basic function as that of providing educational opportunities for persons who would not otherwise have a chance to develop their talents. The School of Law, fully accredited by the American Bar Association and the Association of American Law Schools, met this need for thousands of young men and women. By 1953, shifting social and economic patterns made the evening school a doubtful vehicle for entry into a profession

whose practice required the mastery of a rapidly expanding body of knowledge and skills. Yet the number of students entering the day division remained small. Lacking an alternative plan consistent with the purposes of the University, the Trustees decided to close the School in 1953.

Meanwhile, the University enjoyed a remarkable development of faculty, programs, and resources. It now has a full-time enrollment in excess of 17,000 and a total enrollment of more than 43,000. The Basic Colleges offer curricula in business administration, education, engineering, liberal arts, nursing, pharmacy and allied health professions, health education, physical education, physical therapy, recreation education, and criminal justice.

Loyal graduates of the Law School never fully accepted the decision to close it, and they played a major role in the School's reopening. The President and Trustees of the University undertook a careful and extensive examination of the status of legal education in the United States. The consequence of this investigation was a decision to revive the School of Law.

The reestablished School of Law was opened to students in September 1968, at a time when the University was placing increased emphasis on graduate-level programs. In other fields of study, Northeastern has pursued a policy of prudently preparing to offer graduate degrees. Faculty strength, library holdings, and research facilities have been carefully developed to support these endeavors. The School of Law was similarly prepared. After inspection on behalf of the American Bar Association, the School was accredited in 1969 and was admitted to membership in The Association of American Law Schools in 1970.

# The Cooperative Plan

The School of Law operates on the Cooperative Plan of Education. Used by the University since 1909 with enormous success in other fields, it is now applied to legal education for the first time.

Cooperative education provides alternating intervals of full-time practical work experience and full-time academic education. Northeastern University is one of the nation's oldest sponsors of this plan and currently has more students enrolled in cooperative education than any other institution in the country. The University and the School of Law are convinced that education which combines academic study and practical experience is better education than can be obtained in the classroom alone. While in school, the student's full time must be devoted to law courses and related activities at the school. While working, the student is required to devote full time to the job on which he or she is employed.

One of the important collateral benefits of the Cooperative Plan, particularly appreciated by students, is the opportunity to explore four different employment situations and four geographic areas of the country before making a final career commitment. Many students accept permanent employment with one of the employers for whom they have worked as cooperative students; while, for others, the work experience provides a realistic basis upon which to judge other career opportunities.

During the work periods, students leave the somewhat artificial community of the school and take roles in real life. Dealing with persons and handling tasks of the variety which they will encounter after graduation, the students expand their skills and understanding and develop a degree of self-confidence which few new law school graduates possess.

For young lawyers, the Cooperative Plan has a very special importance. It has been traditional in the legal profession to view the relative helplessness of newly admitted attorneys with a mixture of humor and despair. Various expedients have been adopted to bridge this gap between education and practice, such as lectures and demonstrations for new lawyers, internships, and "in-house" training programs conducted by law firms for newly hired asso-

ciates. The graduates of a cooperative law school are in a different position. They already have had 12 months of experience before graduation. Although cooperative work periods do not produce a finished lawyer, they provide a substantial advance in developing the skills and abilities of a lawyer.

The oldest tradition in legal education is that of serving an apprenticeship in a law office. Learning the law exclusively in school is an historically recent development. Certainly, academic training has become essential as the body of law has grown in size and complexity and as the social and economic setting in which it operates has proliferated. However, much has been lost in the movement from office to classroom. Contemporary law students sense the deficiency and are eager for practical work experience as a supplement to classroom instruction. The Cooperative Plan represents the ideal blending of the academic and practical aspects of legal education.

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Under the Cooperative Plan, each student completes the first year of academic study in the School. At the end of the spring quarter, the class is divided into two sections, one of which begins the second year of academic study while members of the other section accept positions in law offices, corporate legal departments, public agencies, defender/prosecutor programs, and other legal activities. At the end of each academic quarter, the two groups change places. This alternation between school and office continues for two years, including two summers. The law degree is awarded upon successful completion of seven academic quarters and four work quarters. The cooperative program is spread over the same calendar span as that of conventional law schools, but the Cooperative Plan uses two full summer quarters. Both the practical and the academic work is done on a full-time basis. The School has sufficient experience with the placement of students to demonstrate the soundness of this form of legal education.

The School of Law seeks positions which will be filled continuously by students. The School does not assign students to positions which are not fairly compensated in the light of the nature of the work and the degree of the students' education. Positions with law firms, corporations, and public agencies and organizations have been obtained in Boston, elsewhere in Massachusetts, and in other major cities throughout the United States. The School does not undertake to provide each student with a job; indeed, no such undertaking is possible with respect to

professional employment. The School, however, does provide professional opportunities for which suitable candidates are recommended, with the actual employment decision left to the employer's judgment.

The Boston legal community, both public and private, cannot provide professional employment for all students. An applicant should be aware of the inherent limitations on the number of positions available in Boston, and understand the value of the variety of experience to be gained from the many positions available with law firms, major corporations, governmental agencies, and public service organizations located in other areas. Students must be prepared to accept cooperative employment outside the greater Boston area. Long-term arrangements for leases, employment contracts for spouses, and similar commitments should be made with the cooperative program in mind so that it will not be difficult to accept cooperative work assignments outside the greater Boston area. Students are also advised to obtain the full professional and educational benefits of the cooperative program by seeking employment experience in a wide variety of legal settings and geographical areas.

Successful completion of the work quarters is required for degree qualification. Employers file reports appraising the students' professional performance. The School reviews the students' experience in continual reappraisal of each position's suitability for educational purposes. In addition, students are required to file a job evaluation at the close of each work quarter.

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## Facilities

The School of Law is located in the handsome Ethel and Reuben Gryzmish Hall, opened in 1970 and named in honor of a distinguished alumnus and his wife. The building houses tiered classrooms for basic instruction, seminar rooms, a lounge, faculty offices, and a spacious and realistic courtroom.

The Law School building is located on Northeastern University's main campus. The full array of University facilities are nearby, including the main library, student center, bookstore, theater, gymnasium, and swimming pool.

### *Library*

The Berkowitz Law Library is an integral part of the School of Law and is located on the second level of Gryzmish Hall. The Library is air conditioned, with a spacious reading room decorated in contemporary style. In the stacks there are carrels and conference/typing rooms available for individual student use.

The rapidly growing Law Library has a carefully selected collection of more than 82,000 volumes. It includes all the official reports of every state court of last resort, the National Reporter System, annotated and topical reports, selected materials of administrative bodies, numerous loose-leaf reporter services, a complete collection of the current state and Federal annotated codes, and a strong collection of English and Canadian decisions and legislation. There is also a comprehensive collection of current legal journals and reviews, as well as treatises and textbooks.

Of special interest is the Sara R. Ehrmann Collection on Capital Punishment. Named in honor of its donor, a pioneer in the movement to abolish capital punishment, this collection of books, articles, legislation, and news items presents a full picture of the operation of the death penalty in this country from 1920 to the present.

The private library of Professor Quincy Wright, the noted scholar, forms the nucleus of an impressive international law collection.

Law students also have access to the Northeastern University libraries and, by special arrangements through the office of the Law Librarian, to various law school and research libraries in the metropolitan Boston area.



# Student Life

The Law School and the University are located in Boston's old Back Bay section, which has become a center of education and culture. Students at the University have readily available a range and quality of music, art, and lectures unexcelled in America. Within easy walking distance of the School of Law are the Boston Museum of Fine Arts, Symphony Hall, Simmons College, the Isabella Stewart Gardner Museum, Emmanuel College, Horticultural Hall, the New England Conservatory of Music, and the Prudential Center.

In Boston, a law student can observe the Supreme Judicial Court of Massachusetts, the United States Court of Appeals for the First Circuit, the Federal District Court, the Massachusetts Appeals Court, the Massachusetts Superior Court, and a full range of lower tribunals. The state legislative process can be studied in action at the Massachusetts State House on Beacon Hill, and the metropolitan Boston area presents an array of municipal and county agencies.

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## *Housing*

The School of Law is located in a section of Boston's Back Bay area which is heavily populated with students from a variety of educational institutions. For this reason, there is a shortage of available housing. University dormitories are restricted to undergraduates. The Housing Office lists private accommodations for rent by students.

Requests for housing information or accommodations should be made in writing to the Director of University Housing, Northeastern University, 360 Huntington Avenue, Boston, Massachusetts 02115. The Housing Office is at 122 St. Stephen Street, near the Law School.

## *University Health Service*

The University Health Service is located in the Forsyth Building, very close to the Law School. Regular clinic hours for

students are maintained by the University Physician and his staff.

All full-time students are covered by a special Blue Cross-Blue Shield policy from the day of registration until 12:00 noon on the day following withdrawal, leave of absence, dismissal, or graduation from the University. Each student receives a brochure describing the policy.

Prior to initial registration in the University, each student must file with the Health Service a physical examination record and a chest x-ray. Forms for the examination are available at the Health Service Office, and are mailed in advance to prospective students who indicate their intention to register in September. The University Health Service cannot provide medical services for students who do not comply with this requirement.

Students who become ill should report immediately to the University Health Service. House calls are made only to students who live on University property, both dormitories and apartments. Request for a house call must come through the director of the residence or a member of the director's staff.

### *Student Participation*

It is the policy of the School of Law to encourage student participation in the development of the program of instruction. An educational experience can be enriched beyond the value of its substantive content by having the student reflect upon the educational process. Students, individually and collectively, are invited to join with the faculty in continuing evaluation of the educational process.

### *Black American Law Students Association*

The School of Law has a chapter of the Black American Law Students Association. Interested students should contact the Association for information and assistance.

### *National Lawyers' Guild Chapter*

The Northeastern Chapter of the National Lawyers' Guild was organized in the spring of 1974. Interested students should contact the representatives of the Chapter for information and assistance.

## *Northeastern Women's Law Group*

Northeastern Women's Law Group is open to women students, faculty, and staff. For additional information or assistance, contact Northeastern Women's Law Group.

## *Placement Office*

The School of Law maintains a placement office to assist third-year students and alumni in finding job opportunities.



# Admission

A candidate for admission to the Law School must hold a bachelor's degree from an accredited college or university. Acceptance is based upon superior academic achievement in undergraduate studies and acceptable scores on the Law School Admissions Test, administered by the Educational Testing Service of Princeton, New Jersey. The test is administered periodically at convenient centers throughout the country. Applications for the LSAT and for admission to the School will be sent upon request.

The School of Law is committed to the highest academic standards. No candidate will be accepted whose record and test scores promise anything less than superior performance. The School undertakes to seek cooperative work opportunities at a professional level in private, public, and corporate offices, and to fill these positions with students who can perform productive legal services as early as the end of the first year in law school. Thus, the School seeks students of superior ability, strong motivation and maturity.

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Northeastern solicits the interest of prospective law students whose qualifications make them eligible for admission to highly selective law schools. The distinctive program of the Law School appeals to persons who are interested in a program of professional instruction heavily reinforced by experience in legal practice. The goal of the school is to produce lawyers who can practice the traditional skills of the law and who can give learned, professional responses to the problems which are making increasing demands upon the legal system.

No specific fields of undergraduate study are demanded as a pre-law background. Of particular importance are the mastery of oral and written verbal skills, a capacity for independent research, and the ability to exercise critical judgment. A basic knowledge of accounting and business is useful in some parts of the law curriculum. Undergraduates are best advised to pursue a wide range of interests.

In gauging one's chances of being admitted to the Law School, the following information on admissions policy and prac-

tice may be helpful. The median LSAT score of all classes has been well in excess of 600. Students with high scores but inferior college grades are rarely accepted. No specific grade-point average is required, but accepted applicants are generally in the top quarter of their classes. Great weight is placed upon intellectual ability, the nonacademic qualities of the applicant (indicated by such factors as extracurricular interests and activities), work experience, and career goals.

The School of Law requires that all applicants register with the Law School Data Assembly Service for the submitting of their complete academic records and the reporting of the LSAT scores.

Applicants who have outstanding records of nonacademic achievement should not be deterred because their college grades and LSAT scores are not distinguished. The student body of the School of Law includes many men and women who have had very successful careers between college and law school. The School seeks students who are capable of superior achievement and looks to the full range of an applicant's aptitude, background, and accomplishments.

The deadline for submitting applications to the School of Law is February 15. Completed application files are submitted to the Admissions Committee beginning in December.

The School of Law follows a "rolling admissions" policy. The Admissions Committee reviews applications as the files are completed. If the certainty of acceptance is not clear, an applicant's name is held on a waiting list if he or she so desires.

The application fee is \$25. Students who receive notice of acceptance must pay a nonrefundable tuition deposit within a time period stated in the letter of acceptance.

If an applicant decides not to attend the School of Law after paying the final deposit, notice should be given to the Director of Admissions so that the vacant space in the class may be filled by someone on the waiting list.

# Financial Information

## *Tuition and Fees*

Tuition for the academic year 1974—75 was \$2,625 for the first year and \$2,100 for the upper-class years. An annual fee for supplementary printed and duplicated materials supplied for classes is also charged to each student. The University hopes to hold tuition and fees at the lowest possible rates, but it must reserve the right to revise the tuition rates and fees by action of the Board of Trustees at any time.

The tuition deposit required of students who are accepted for admission is applied against the first quarter tuition bill. The deposit is nonrefundable.

In appropriate cases, students who withdraw from the University during an academic quarter may receive a refund of a portion of the tuition. During the first week of the quarter, any refund which is granted is for the entire quarter's tuition. The refund is reduced 25 percent each week. After the fourth week of the quarter, no refund can be made under any circumstances.

Books assigned by the faculty in the various courses are available through the University Bookstore. It is estimated that the annual book expense for the first-year student will be approximately \$200. In some instances, used books may be obtained at a substantial saving.

## *Financial Aid*

Northeastern University has a limited amount of financial aid available to assist students whose resources would otherwise make it impossible to attend the School of Law. The larger portion of these funds is awarded to the first-year students, with lesser amounts going to second- and third-year students because the Cooperative Plan produces income for them which is not available in the first year. A few positions as research assistants to members of the faculty are available to second- and third-year students on the basis of professional ability and financial need.

The University awards all financial aid on the basis of financial need. It is a participant in the Graduate and Professional School Financial Aid Service. All applicants for aid must file a GAPS FAS form. The GAPS FAS application may be obtained from the financial aid officer at the institution in which the student is currently enrolled or from the Office of Financial Aid at Northeastern University. The GAPS FAS form may also be obtained from the Graduate and Professional Financial Aid Service, Box 2614, Princeton, New Jersey 08540. The application should be filed no later than February 1 to ensure its receipt at Northeastern by March 1. The application contains sections to be completed by the applicant, by the spouse or spouse-to-be, and by the applicant's parents. All three sections must be completed.

No decision will be made on an application for financial aid until the GAPS FAS form is received.

The University does not award financial assistance in any form to students who are not citizens or permanent residents of the United States.

The following types of aid are currently available to students of the School of Law:

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### *Scholarships*

#### **The Thomas E. Cargill, Jr., Scholarship**

The Thomas E. Cargill, Jr., Scholarship, established in 1972 by Thomas E. Cargill, Jr., is awarded to a student in the School of Law. Mr. Cargill is a graduate of the School of Law, Class of 1948, and a Director of The National Council. Preference will be given to students based upon demonstrable financial need. Selection is made by the Committee on Scholarships.

#### **The Nathan and Adele Hillman Scholarship**

The Nathan and Adele Hillman Scholarship, established in 1971 by Nathan Hillman, a graduate of the School of Law, Class of 1942, is awarded annually to a student in the School of Law. It will be given to students who are either orphans or from broken homes, based upon demonstrable financial need. Selection is made by the Committee on Scholarships.

### **The Joseph and Corinne Krinsky Scholarship**

The Joseph and Corinne Krinsky Scholarship, established in 1972 by Joseph Krinsky, a graduate of the School of Law, Class of 1941, is awarded annually to a student in the School of Law. Preference will be given to students based upon demonstrable financial need. Selection is made by the Committee on Scholarships.

### **The William M. Prifti Scholarship**

The William M. Prifti Scholarship, established in 1972 by William M. Prifti, a graduate of the School of Law, Class of 1951, is awarded annually to a first-year student in the School of Law. Selection is made by the Committee on Scholarships.

### **John T. Powell Memorial Scholarship**

The John T. Powell Memorial Scholarship was established in 1974 by the law firm of Hale and Dorr, in memory of Mr. Powell, a partner in that firm and a graduate of the School of Law, Class of 1928. The income from this scholarship fund is awarded annually to one or more deserving students enrolled in the School of Law who demonstrate financial need, academic stability, and soundness of character. Selection is made by the Committee on Scholarships.

### **The Ralph B. Rogers Scholarship**

The fund to provide this scholarship has been established through the generosity of Ralph B. Rogers, a graduate of the School of Law, Class of 1939. The income from this scholarship fund is awarded either to entering students or to upper-class students enrolled in the School of Law. Selection is made by the Committee on Scholarships.

### **The Frank H. and Ruth Shapiro Scholarship**

The Frank H. and Ruth Shapiro Scholarship, established in 1974 by Frank H. Shapiro, a graduate of the School of Law, Class of 1932, is awarded annually to students enrolled in the School of Law. Preference will be given to deserving students who can dem-



onstrate financial need. Selection is made by the Committee on Scholarships.

## *Loans*

### **Guaranteed Insured Loan Programs**

These loans are available through lending institutions in the applicant's home area. Under this program a student may borrow as much as \$2,500 per academic year to a maximum indebtedness of \$10,000. Repayment of principal and interest need not begin until nine months after the termination of studies.

Because of the easy availability of these funds relative to other kinds of financial assistance, it is recommended that all aid applicants first seek assistance from this source.

### **National Direct Student Loan**

The maximum amount which may be borrowed in any academic year is \$2,500, and the total of the loans must not exceed \$10,000. The amount of a loan is determined by the financial position of the student and his family and by the availability of these funds at Northeastern University. Repayment of these loans begins nine months after the termination of study.

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## *College Work-Study Program*

Not to be confused with Northeastern University's Co-operative Education Program, this is basically a federally supported part-time employment program. Jobs are available on the campus or in nonprofit agencies in the greater Boston area. Determination of eligibility for work-study employment and actual job placement are accomplished through the Office of Financial Aid.

## *Other Assistance*

There are some openings each year as residence director or resident assistant in the undergraduate male dormitories. Inquiries and details concerning availability of these jobs may be obtained from the Associate Dean of Students for Housing, 203 Ell Student Center.

Occasionally, spouses of male law students are able to obtain positions as full-time residence directors in the women's dormitories at Northeastern University. These positions provide a salary plus full-time maintenance, which includes a comfortable apartment and meals. Inquiries may be made to the Associate Dean of Students, Room 104 Ell Student Center.

## Degree Program

### *Degree*

Upon recommendation of the faculty, the degree of Juris Doctor (J.D.) will be conferred on a student who successfully completes seven quarters of law study and four quarters of cooperative work.

### *Grading System*

The Cooperative Plan of legal education diminishes the utility of traditional grading. Academic courses are graded on a pass-fail basis. The teacher of each course makes a written appraisal of each student's performance in the course. Further, each cooperative employer submits a written evaluation of the student's professional performance. These academic and professional evaluations are made part of the student's permanent record.

Prospective employers of Northeastern graduates rely on the evaluations of a student's professional performance made by the lawyers who closely supervised the student over the 12-month period (four quarters) of practical experience, as well as on the academic appraisal.

It should be clearly understood that the pass-fail grading system does not eliminate the academic risk to which a law student is exposed. The faculty reserves the right to dismiss any student whose individual written work, classroom performance, examinations, and professional evaluations indicate unsatisfactory progress toward professional competence.

## *Legal Writing*

The ability to draft legal documents, to express agreements in clear and unequivocal language, to summarize research findings in legal memoranda, to prepare persuasive briefs in support of a position, and to develop other written instruments are essential parts of a lawyer's skills. At Northeastern, training of the student in these techniques begins in the first quarter of the first year and continues into the moot court program. Each first-year student must participate in the preparation of a brief and the presentation of an oral argument in an appellate case.

## *Attendance and Conduct*

Regular class attendance is expected. The right to take examinations and to continue as a student in the School of Law is conditioned upon regular attendance at its exercises.

Students are admitted subject to the rules of the University and the School of Law, and their continuance at the School is conditioned on the observance of these rules. Students participate in the process of developing the policies of the School as prospective members of a responsible and self-disciplining profession.

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Academic rules are published in the *Student Handbook*.

## *Admission to the Bar*

Many states require that a student who plans to apply for admission to the bar file an official state registration prior to the commencement of legal studies. The requirements of a particular state can be obtained from the Board of Bar Examiners. Each student should investigate the requirements of the state in which he or she plans to practice.

# Curriculum

## First Year

### (No cooperative work)

| <i>Required Courses</i> | <i>Fall</i> | <i>Winter</i> | <i>Spring</i> |
|-------------------------|-------------|---------------|---------------|
| Civil Procedure         | 2           | 2             | 3             |
| Constitutional Issues   | 2           | 2             | 2             |
| Contracts               | 3           | —             | 3             |
| Criminal Justice        | 4           | 2             | —             |
| Federal Income Taxation | —           | 3             | 3             |
| Land Ownership and Use  | —           | 3             | 3             |
| Torts                   | 3           | 3             | —             |
| Legal Writing           | 1           | —             | —             |
| Moot Court              | —           | 1             | —             |
|                         | <u>15</u>   | <u>16</u>     | <u>14</u>     |

All second- and third-year courses are elective except for Law Office Problems. Students may choose freely from the courses offered during a particular quarter.

# Upper-class Courses Planned for 1974-76

|   |  |
|---|--|
| Administrative Law                        | Estate Planning                              |
| American Legal History                    | Evidence                                     |
| Antitrust                                 | Family Law                                   |
| Business Planning                         | Federal Jurisdiction                         |
| Civil Advocacy                            | Income Taxation of Trusts<br>and Estates     |
| Civil Trial Practice                      | International Law                            |
| Commercial Paper                          | Labor Relations Law                          |
| Conflict of Laws                          | Law, Language and Ethics                     |
| Constitutional Law and<br>Minority Issues | Legal Accounting                             |
| Consumer Protection Planning              | Legal Process                                |
| Corporations                              | Prisoners' Rights                            |
| Criminal Advocacy                         | Real Estate Transactions                     |
| Criminal Process                          | Secured Transactions                         |
| Criminal Trial Practice                   | Taxation of Corporations<br>and Shareholders |
| English Legal History                     | Trusts and Estates I, II                     |
| Environmental Law                         | Urban Law I, II                              |
| Equal Protection of the Law               | Women's Rights                               |
| Equitable Remedies                        |  |

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A few courses may be offered in alternate years. Highly specialized courses may not be offered in a given year if the demand is insufficient.



# Courses of Study

## First Year

### Civil Procedure

7 Hours

Deals with the procedural rules by which courts in our country handle noncriminal disputes. It begins by examining why such rules are needed (with a *Lord of the Flies* approach). An overview of an entire litigation is then given, followed by a chronological, in-depth analysis of each segment of a law suit. The purposes of this course are: to provide, along with a working knowledge of the *Federal Rules of Civil Procedure* and typical state rules, an introduction to federalism, statutory analysis, advocacy, and problems inherent in methods of dispute resolution. The course relies heavily on problem-solving.

### Constitutional Issues

6 Hours

Designed to convey a sense of constitutional law as a dynamic process, rather than a static accumulation of data, the course explores how that process can be used to effect desired social change. The initial focus is on the structure and mechanics of constitutional litigation in the Federal courts, with an overview of the civil rights statutes. Within that framework, there follows a survey of the constitution, with special emphasis on the provisions most relevant to current social problems. The course relies primarily on recent decisions of the United States Supreme Court, supplemented by materials needed to place evolving concepts in perspective. Those decisions are scrutinized not only to evaluate their technical and conceptual bases, but also to discern the pressures of competing institutions which generate, on one hand, new interpretations of the constitution and, on the other hand, uncertain compromises as to governing principles. The objective is to blend technical expertise with rigorous theoretical analysis based on the organic role of constitutional law in our contemporary society.

### Contracts

6 Hours

An exploration into the legal principles governing the formation and enforcement of contracts and the operation of these principles in the context of negotiation, planning, and drafting. Specific attention is directed to the substantive and formal requi-

sites of contract formation, including mutual assent, consideration, and the Statute of Frauds; the interpretation of contracts and the effect on performance of error and changed circumstances; the effect of contracts on the rights of third parties; and the remedies available for the enforcement of contracts, including damages, restitutionary relief, and specific performance. Consideration is given to the effect of recent statutory developments, including the Uniform Commercial Code.

### **Criminal Justice**

6 Hours

An introduction to criminal law and its processes, the study explores the general elements of criminal liability—act, intent, capacity—and the specific application of those elements with respect to given categories of criminal behavior—homicide, conspiracy, attempts to commit crimes. The course also treats the constitutional and philosophical limitations on the use of the criminal law as a means of social control. The study of the criminal process deals with both the constitutional limitations on the power of the state to detect, apprehend, interrogate, and determine the guilt of an alleged violator of the criminal law and an examination of the extent to which those principles actually control the operation of the criminal process.

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### **Federal Income Taxation**

6 Hours

The purpose of this course is to teach first-year students to interpret an elaborate statutory scheme. In addition to exploring tax problems that confront individuals, businesses, and other groups, the course examines the need for substantive tax reform and the potential use of the tax mechanism to effect social change.

### **Land Ownership and Use**

6 Hours

The concept of property as developed by courts and legislatures is explored at the outset. The focus then turns to the various interests in land, with heavy emphasis placed on the landlord and tenant relationship. Methods by which one acquires and protects an interest in land are considered. The second half of the course deals with the allocation and development of land resources. Both private restrictions on land use and community planning techniques are studied.

### **Torts**

6 Hours

A study of intentional and unintentional harms to a person's reputation, privacy, peace of mind, and property, both real and personal. The availability of tort remedies for wrongful con-





duct against disadvantaged persons is investigated. Examination is made of contemporary developments of liability for manufacturing and marketing defective products, as well as nuisances and the special remedies available against them. Liability for fraudulent misrepresentations is explored briefly. Particular emphasis is placed on understanding some of the historical roots of our legal system and the common law methods for developing legal principles. This is related, however, to economic and social realities, particularly as they appear in the field of automobile torts, where current proposals for social distribution of the resulting losses are studied. Students are required to develop their skills as advocates and are introduced to practical concepts of case evaluation and settlement of tort claims.

**Administrative Law**

3 Hours

The ways in which lawyers can use the judicial process to control official behavior which affects private interests. The course considers both the procedures which government officials must follow in reaching their decisions, and the methods and limitations upon judicial review. The course is conducted entirely through discussion of questions and problems which are distributed at the beginning of the course.

**American Legal History**

3 Hours

An introduction to the history of American law, beginning with an examination of the role of the common law in America and a review of the difficulties with the reception of English law after independence; turning to consideration of the problems of development of a native American law in a federal system; and concluding with a study of the 19th-century movement for codification. Howe's *Readings in American Legal History* (1949) is assigned.

**Antitrust**

3 Hours

The legal and institutional bases of present-day efforts at governmental control of private economic power and the administrative implementation of these controls. Specific attention is given to monopolization, "conspiracy" to restrain trade through horizontal and vertical arrangements and merger.

**Business Planning**

3 Hours

An examination of the basic legal materials and rules through which business enterprises, particularly corporations, are organized, funded, and operated. The purpose is to provide familiarity not only with the legal materials, but also with the techniques used by lawyers in applying them. Problems of structure, raising capital, compensation, capital changes, liabilities of promoters, directors and officers, and the taxation of businesses and shareholders are considered. The method is an analysis of a series of problems and the application of legal materials to work out solutions. Prerequisites: Corporations and Federal Income Taxation.

## **Civil Advocacy**

7 Hours

The major purposes of the course are:

1. To give intensive, guided experience and training in all elements of civil litigation, including interviewing, investigation, pleading, written and oral discovery, motions, negotiations, pre-trial conference, legal writing (including different types of briefs), and the trial itself.

2. To teach written and oral advocacy techniques and skills, with emphasis on discerning and achieving goals, discovering and using facts, clear expression, persuasion, and balanced judgment.

3. To teach the rules of evidence, as a working discipline, to students who have not otherwise had the evidence course or those who want a refresher course in evidence.

The course revolves around one very complex real multi-party factual situation. A litigation is simulated from client interview through trial. The students divide into law firms representing each party. Instructional techniques include the analysis of student performances, with line-by-line critiques of written work and classroom review of videotaped oral presentations.

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## **Civil Trial Practice**

2 Hours

Use of litigation problems to develop experience in and understanding of the mechanics of civil litigation and the adversary process from pre-trial investigation and discovery through trial.

## **Commercial Paper**

3 Hours

A study of the law of negotiable instruments and bank deposits and collections through an examination of Articles 3 and 4 of the Uniform Commercial Code, relevant cases, problems, and general issues of statutory construction.

## **Conflict of Laws**

4 Hours

Designed to acquaint the student with the basic problems that arise when some or all of the operative facts creating a claim or a defense arise in a jurisdiction other than where the case is being tried. Jurisdiction, foreign judgments, and choice of law problems are covered extensively, as well as the problem of domicile as a key to conflict problems.

## **Constitutional Law and Minority Issues**

3 Hours

The rapidly growing body of law attacking racial discrimination in education, housing, and employment. The historical background of these fields is reviewed, but focus is on contemporary issues, including: the "*de facto-de jure*" school controversy, the legal support for "community control" concepts, the referendum barrier to low-income housing in suburban areas, and the limits of affirmative action in employment litigation. Special attention is given to limits on the right to protest all forms of discrimination imposed by the courts. The alternatives to legally protected protest activities, including civil disobedience, are also reviewed.

## **Consumer Protection Planning**

3 Hours

The legal rights of consumers and techniques for vindicating those rights. The legal and economic relationship between providers and users of goods and services is analyzed, as are the problems which typically arise from that relationship. Special emphasis is given to the practical problems of protecting the rights of poor people. Judicial, administrative, and legislative remedies are studied, and the forms of concerned action (class actions, boycotts, cooperatives, etc.) are explored.

## **Corporations**

4 Hours

Use of modern business corporations, both public and closely held; comparison with other forms of business associations; formation of the corporation; control and management of the corporation; allocation of power among and action by directors, officers, and shareholders; duties of directors and controlling shareholders; regulation of the exercise of corporate powers by the fiduciary principle and by Federal and state securities regulations, to include an examination of the proxy device, and insider trading and profit taking; and the enforcement and protection of shareholders' rights, through derivative suits and other actions.

## **Criminal Advocacy**

7 Hours

Examination of the techniques, strategies, and decisions involved in the preparation and trial of a criminal case, with constant emphasis on translating theory into the mechanics of practice. The course does not attempt to make an advocate of anyone; rather, it provides students with an analytical framework to enhance self-learning on the basis of practical experience. Video-taped examples of direct and cross examination, interviewing, argument, and other advocacy skills are analyzed to formulate criteria for evaluating performance. Students perform simulated

exercises based on hypothetical cases, culminating in a mock trial, and also handle under supervision two or three actual cases in a local criminal court. Enrollment is limited to 20.

**Criminal Trial Practice** 2 Hours

Use of litigation problems to develop experience in and understanding of the mechanics of criminal litigation and the adversary process from pre-trial investigation and discovery through trial.

**English Legal History** 3 Hours

An examination of the development of important institutions of the law from Anglo-Saxon times to the Tudor period. Students trace the growth of the judiciary, the jury, legislation, and the legal profession and its literature, together with important substantive areas of the law, such as property, procedure, and tort. Source materials are used throughout and supplemented by readings in the standard literature of legal history.

**Environmental Law** 3 Hours

An examination of the legal institutions and doctrines relevant to the control of the environment. The course deals with water and air pollution and its control by private parties, municipalities, states, and the Federal government, as well as problems of resource allocation.

**Equal Protection of the Law** 3 Hours

A study of the case law interpreting the equal protection clause of the 14th Amendment of the United States Constitution, including: the difference between state and private action, the effect of the equal protection clause on racial and sexual classifications, voting rights, and public finance, and of statutes enacted to enforce the equal protection clause. The emphasis throughout the course is upon rigor in constitutional and statutory interpretation and upon the proper role of the judiciary in political decisions.

**Equitable Remedies** 3 Hours

Equitable and extraordinary remedies, with particular emphasis on contempts and other means of enforcing specific decrees. The course also attempts to impart a sense of the substantive intuition underlying equity jurisprudence.

**Estate Planning** 3 Hours

Taxation of gratuitous transfers of property at death and

during life, Federal estate and gift taxes, state death or succession taxes, and the principles of estate planning.

### **Evidence**

2 Hours

Exploration of the rules of evidence and their rationale, with emphasis on relevancy, hearsay, impeachment and cross-examination, opinions and experts, documents and nonconstitutional privileges. Much of the course is done through lectures. Students who want to learn evidence while actually using it can take evidence as a component of Civil Advocacy or Criminal Advocacy. Students are permitted to take both this course in evidence and the additional evidence component while taking Criminal Advocacy or Civil Advocacy.

### **Family Law**

3 Hours

Primary focus is on the process of the dissolution of marriage. In addition to studying the law of divorce, alimony, child support, custody, and the tax aspects of divorce, the course focuses on certain skills of the lawyer which are necessary to represent clients adequately. This includes: client interviewing and advice, working with mental health professionals, preparing and examining expert witnesses, negotiating, and drafting complex agreements. The course is taught in conjunction with a clinical psychologist and a social worker who operates a family court clinic.

### **Federal Jurisdiction**

3 Hours

The jurisdiction and functioning of the Federal courts, the distribution of authority between Federal and state courts, and the roles of Federal and state law in the Federal system. Topics include: the constitutional limits of Federal judicial power; appellate and collateral review in the Federal courts, diversity, Federal question jurisdiction of the Federal courts; and choice of law in Federal courts.

### **Income Taxation of Trusts and Estates**

1 Hour

This course is open only to those also studying trusts. The subject matter is the income (not estate and gift) taxation of the family, and of the use of schemes (especially trusts) to deflect the taxation of income to members of the family in low tax brackets.

### **International Law**

3 Hours

The law of nations, including the nature and sources of international law; jurisdiction of states over persons and territory; recognition of states and governments; governmental immunities;

the law of treaties; legal restrictions on the use of force; and principles of state responsibility. International organizations, including the United Nations, are also studied.

### **Labor Relations Law**

3 Hours

A general introduction to the law of labor relations through an examination of the National Labor Relations Act and leading cases, together with historical, social, and economic materials. Topics covered include: organization, union recognition, unfair labor practices, collective bargaining, and arbitration.

### **Law, Language, and Ethics**

3 Hours

In this seminar students analyze a series of related issues in legal philosophy: the nature of moral and legal choices, the meaning of responsible human action, the character types needed for various roles in the legal system, and the effect of different conceptions of human nature on the type of legal system that is considered necessary.

### **Law Office Problems**

1 Hour

A seminar to enable students to reexamine their cooperative work experience in the light of their academic work and to enlarge each other's understanding by an exchange of relevant experience. Particular emphasis is placed upon matters of professional responsibility and ethics.

### **Legal Accounting**

2 Hours

This course offers the fundamentals of accounting and the relationship of law and accounting to students with little or no accounting background.

### **Legal Process**

3 Hours

A critical study of the division of responsibility for the development of legal doctrine between courts, legislatures, administrative agencies, and counsel for private parties, and the resulting roles for lawyers in each of these institutions. Considerable attention is given to evaluating techniques of statutory interpretation in light of the relative positions and capabilities of courts and legislatures. Other topics covered include: the respective roles of courts and counsel in long-term private planning (e.g., percentage leases); of courts, administrative agencies, and legislatures in consumer protection; and of courts, legislatures, and private parties in doctrinal innovation.

### **Prisoners' Rights**

3 Hours

Development of an analytical framework for determining the scope of political and civil rights retained by prisoners, with special emphasis on remedies available to protect these rights. Among the substantive and procedural areas which are discussed are the following: safeguards against unjust administrative punishment; prison censorship and abridgement of other First Amendment rights; protection against psychosurgery and other forms of behavior modification; right to treatment and to job training; right to parole and restitution of full citizenship after release; right to unionize and bargain collectively regarding conditions of incarceration; media access to prisons; and alternatives to the existing penal system in light of relevant declarations of the United Nations and contemporary theories of the nature and function of criminal law. The course also touches upon the field of civil commitment.

### **Real Estate Transactions**

3 Hours

The planning and execution of commercial transactions in real property. Particular attention is given to conveyancing, with examination of the rights and obligations of the parties in various types of transfers. Brokerage transactions, the recording acts, land registration, title insurance, mortgages and other financing and security devices are also considered.

### **Secured Transactions**

3 Hours

A study of the law of secured transactions through an examination of Article 9 of the Uniform Commercial Code. The principal features of the Bankruptcy Act relating to security interests are also considered, as well as cases, problems, and general issues of statutory construction.

### **Taxation of Corporations and Shareholders**

3 Hours

An examination of the impact of the Federal Income Tax on corporations and shareholders. The primary emphasis is on Subchapter C of the Internal Revenue Code. Among topics covered are: the taxation of dividends, stock redemptions, liquidation, distributions, and taxable and tax-free sales of corporate stock and assets.

### **Trusts and Estates I**

3 Hours

The devolution of property by gratuitous transfer, whether by will, intestate succession, or gift. The course includes an elementary treatment of the doctrine of estates and rules governing



the creation of present and future interests in real and personal property.

**Trusts and Estates II** 3 Hours

The central focus of this course is on the trust device as a means of accomplishing the devolution and control of property interests. It includes: the creation and enforcement of the trust relationship, an examination of the fiduciary concept, and the problems of trust administration.

**Urban Law I** 3 Hours

An introduction to the basic concepts of urban law. The topics covered include: the provision of shelter and related amenities by Federal, state, and local governmental entities; the evolution of the rights of tenants and displacees; and the emerging role of the judiciary in defining national goals and in assigning the responsibility for meeting those goals. The course is organized around the state and Federal programs which are analyzed from the point of view of developers, tenants, and government agencies.

More specifically, the first section of this course deals with such basic concepts as planning, public purpose, and preemption. The second section involves urban renewal, community development, and relocation, with emphasis upon the government's point of view. The third deals with the public housing program from the point of view of the tenants' rights movement. The fourth analyzes the subsidized housing program and large-scale real estate finance from the point of view of the developer and the investor. Emphasis is also placed upon new types of housing programs.

**Urban Law II** 3 Hours

This seminar analyzes in depth the problems involved in the development of low- and moderate-income housing in suburban communities. Basically, it is a course in discrimination in housing. Two communities are considered in detail. The course emphasizes the concept of metropolitan development; the efficacy of litigation challenging exclusionary zoning; the availability of Federal programs; municipal financing problems; and the relationships among jobs, transportation, and housing. Great emphasis is placed on evolving types of remedies, primarily those involving extraterritorial relief and affirmative action programs.

More specifically, the course is organized around the types of "defenses" or reasons used by municipalities to reject the location of low- and moderate-income housing within their boundaries.

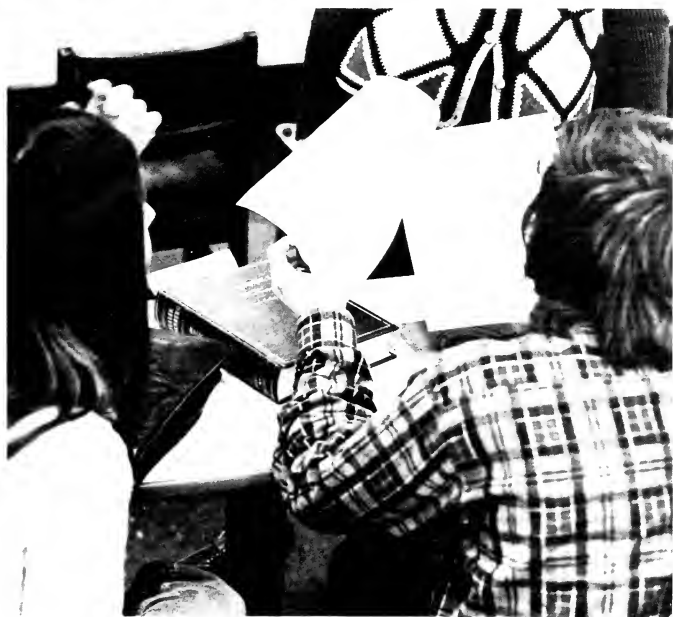
Students, therefore, analyze such topics as the selection of a site, the use of local referenda, exclusionary zoning, the local approval requirement, residency requirements, and the abuse and use of the National Environment Policy Act.



### **Women's Rights**

3 Hours

Begins with an overview of the applicable constitutional precedents. The course concentrates on those areas in which law can be used as an effective means of preventing sex-based discrimination or mitigating its effects, followed by an examination of current happenings in a series of specific areas, such as employment, control of the body, the tax laws, and the Equal Rights Amendment. Much of the materials should be generally useful in dealing with problems of discrimination. There is no examination in this course; rather, papers (or the equivalent) are required. Interested students are encouraged to work on drafting legislation, preparing material for actual or possible lawsuits, etc., in satisfaction of the written requirement.



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William T. Alexander  
O. Kelley Anderson  
\*Diana J. Auger  
Allen G. Barry  
\*Lincoln C. Bateson  
Thomas P. Beal  
\*Roy H. Beaton  
\*F. Gregg Bemis  
Beverly Ann Bendekgey  
Edward L. Bigelow  
Robert D. Black  
Gerald W. Blakeley, Jr.  
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Rexford A. Bristol  
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William L. Brown  
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John L. Burns  
Hyman H. Burstein  
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\*Norman L. Cahners  
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Henry F. Callahan  
Mrs. Anthony S. Camarota  
(Dorothy Dodge)  
Erwin D. Canham  
\*Richard P. Chapman  
Theodore Chase  
Robert F. Chick  
Vessarios G. Chigas  
Carl W. Christiansen  
\*David H. Cogan  
Abram T. Collier  
William A. Coolidge

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H. James Crossan, Jr.  
†Robert Cutler  
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Roger C. Damon  
\*Edward Dana  
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Alfred di Scipio  
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\*Byron K. Elliott  
\*William P. Ellison  
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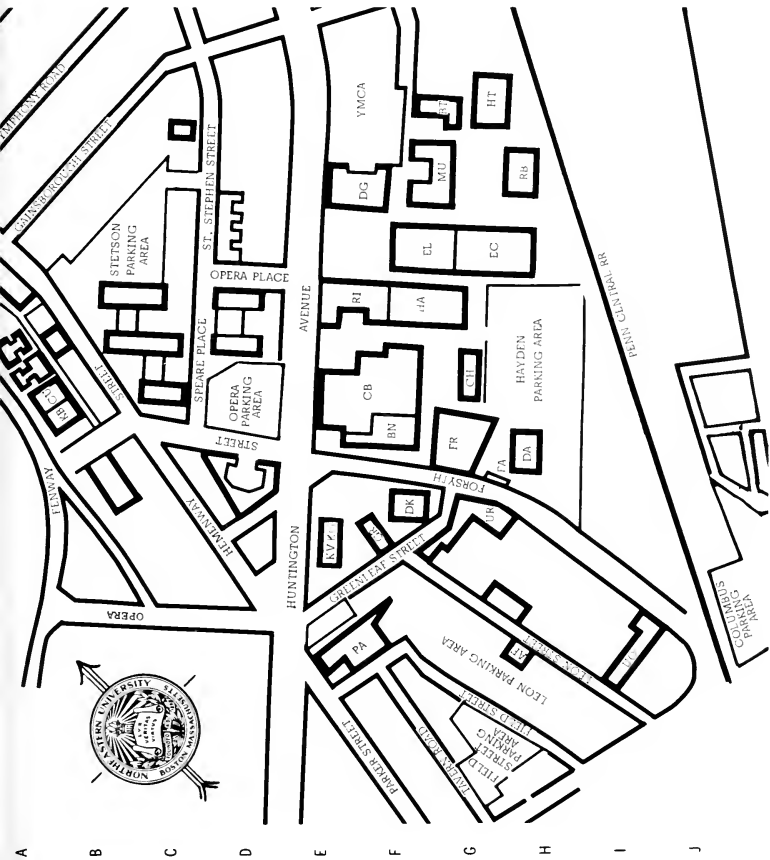
Royal K. Toebes, B.S., M.B.A., *Vice President for Alumni Affairs  
and Associate Director of Development*



| Building                      | Designation |
|-------------------------------|-------------|
| Barietta Natatorium           | BN          |
| Botoiph Building              | BT          |
| Cabot Physical Education Ctr. | CB          |
| Churchill Hall                | CH          |
| Cushing Hall                  | CU          |
| Dana Research Center          | DA          |
| Dockser Hall                  | DK          |
| Dodge Library                 | DG          |
| Ell Student Center and        | EC          |
| Alumni Auditorium             | EL          |
| Forsyth Building              | FR          |
| Forsyth Building Annex        | FA          |
| Greenleaf Building            | GR          |
| Hayden Hall                   | HA          |
| Hurtig Hall                   | HT          |
| Kennedy Building              | KB          |
| Knowles Center (Volpe)        | KV          |
| Knowles Center (Gryzmish)     | KG          |
| 11 Leon Street                | UO          |
| Afro-American Institute       | AF          |
| Mugar Life Sciences Building  | MU          |
| Parker Building               | PA          |
| Richards Hall                 | RI          |
| Robinson Hall                 | RB          |
| United Realty Building        | UR          |

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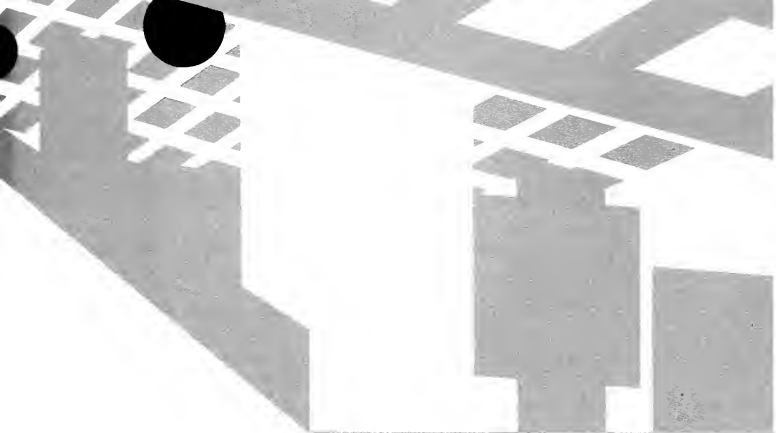
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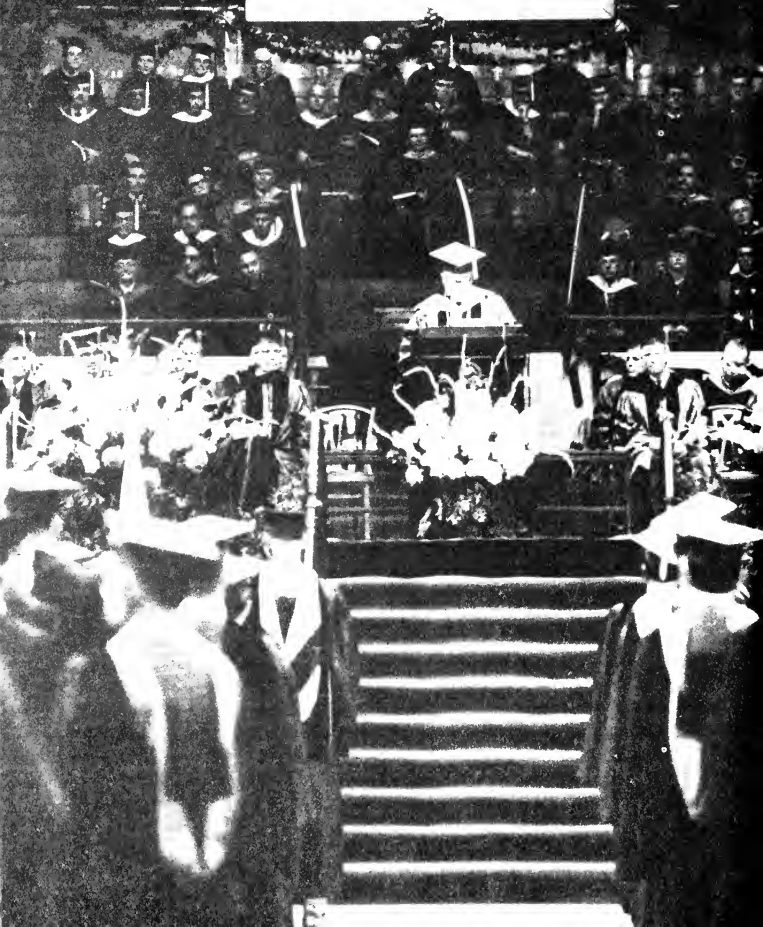




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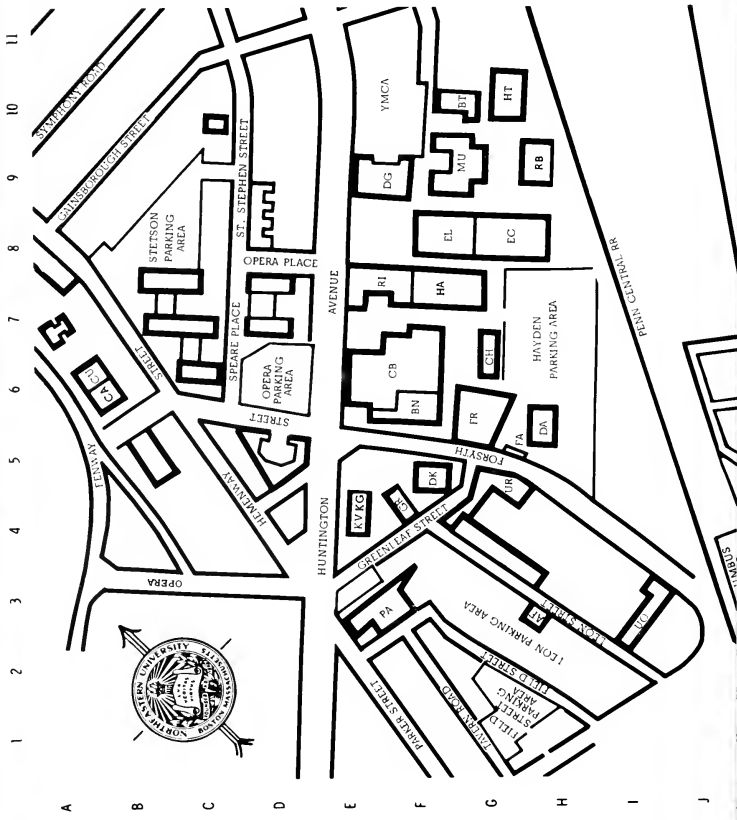
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**Building  
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- BT Botolph Building
- CB Cabot Physical Education Ctr.
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- CU Cushing Hall
- DA Dana Research Center
- DK Dockser Hall
- DG Dodge Library
- EL Eli Student Center and Alumni Auditorium
- FR Forsyth Building
- FA Forsyth Building Annex
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- KV Knowles Center (Volpe)
- KG Knowles Center (Gryzmish)
- UO 11 Leon Street
- AF African-American Institute
- MU Mugar Life Sciences Building
- PA Parker Building
- RI Richards Hall
- RB Robinson Hall
- UR United Realty Building

## **ACADEMIC CALENDAR 1975-1976**

### **Fall Quarter 1975**

|                     |                   |             |
|---------------------|-------------------|-------------|
| Registration period |                   |             |
| Burlington          | Tuesday-Wednesday | Sept. 16-17 |
| Boston              | Monday-Thursday   | Sept. 22-25 |
| Classes begin       | Monday            | Sept. 29    |
| Examination period  | Monday-Saturday   | Dec. 15-20  |

### **Winter Quarter 1975-1976**

|                     |                 |            |
|---------------------|-----------------|------------|
| Registration period |                 |            |
| Burlington          | Tuesday         | Dec. 2     |
| Boston              | Monday-Thursday | Dec. 8-11  |
| Classes begin       | Monday          | Jan. 5     |
| Examination period  | Monday-Saturday | Mar. 22-27 |

### **Spring Quarter 1976**

|  |                 |            |
|--|-----------------|------------|
| Registration period  |                 |            |
| Burlington   | Tuesday         | Mar. 9     |
| Boston   | Monday-Thursday | Mar. 15-18 |
| Classes begin  | Monday          | Apr. 5     |
| Last day to file card for<br>Spring Commencement             | Thursday        | Apr. 1     |
| Last day to pay fee for<br>Spring Commencement               | Friday          | Apr. 30    |
| Final grades due in Registrar's<br>Office for June graduates | Friday          | June 4     |
| Examination period   | Monday-Saturday | June 14-19 |
| Spring Commencement  | Sunday          | June 20    |

### **Summer Quarter 1976**

|  |                    |            |
|--|--------------------|------------|
| Registration period                            |                    |            |
| Burlington                                     | Monday-Tuesday     | June 14-15 |
| Boston   | Wednesday-Thursday | June 16-17 |
| Classes begin                                  | Monday             | June 28    |
| Last day to file card for<br>Fall Commencement | Thursday           | July 1     |
| Last day to pay fee for<br>Fall Commencement   | Monday             | Aug. 2     |
| Examination period                             | Wednesday-Thursday | Aug. 4-5   |

## UNIVERSITY HOLIDAYS 1975-1976

|                                    |                   |                |
|------------------------------------|-------------------|----------------|
| Columbus Day                       | Monday            | October 13     |
| Veterans' Day                      | Tuesday           | November 11    |
| Thanksgiving Recess                | Thursday-Saturday | November 27-29 |
| Christmas Vacation                 | Monday-Saturday   | Dec. 22-Jan. 3 |
| Martin Luther King Day             | Thursday          | January 15     |
| Washington's Birthday              | Monday            | February 16    |
| Patriot's Day                      | Monday            | April 19       |
| Memorial Day                       | Monday            | May 31         |
| Celebration of<br>Independence Day | Monday            | July 5         |
| Labor Day                          | Monday            | September 6    |

## Equal Opportunity Policy

Northeastern University is committed to a policy of providing equal opportunity for all. In all matters involving admission, registration, and all official relationships with students, including evaluation of academic performance, the University insists on a policy of nondiscrimination. Northeastern University is also an equal opportunity employer; it is institutional policy that there shall not be any discrimination against any employee or applicant for employment because of race, color, religion, sex, age, national origin, or physical or mental handicap. In addition, Northeastern takes affirmative action in the recruitment of students and employees.

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 Joseph M. Golemme, M.A., *Director of the Graduate School of Professional Accounting*  
 George W. Hankinson, M.S., *Director of the Graduate School of Engineering*  
 Linda D. Johnson, B.A., *Associate Registrar of the Graduate Schools*  
 John W. Jordan, M.Ed., *Director of the Graduate School of Business Administration*  
 Thomas J. Kerr, M.S.I.E., *Assistant Director of the Graduate School of Engineering*  
 Robert H. Ketchum, Ph.D., *Director of the Graduate School of Arts and Sciences*  
 John J. McKenna, M.A., *Assistant Director, Graduate School of Actuarial Science*

Norman Rosenblatt, Ph.D., *Director of the Graduate Program in Criminal Justice*

Philip J. Rusche, Ed.D., *Director of the Graduate School of Education*

Albert Soloway, Ph.D., *Director of the Graduate School of Pharmacy and Allied Health Professions*

Janice Walker, A.B., *Assistant Director of the Graduate School of Education*

### **University Graduate Council 1975-1976**

The Council determines broad policies and regulations governing the conduct of graduate work. All new graduate programs must be approved by the Council.

#### **OFFICERS**

Arthur E. Fitzgerald, *Chairman*  
Barbara Philbrick, *Vice Chairman*  
Sidney Herman, *Secretary*

#### **Administrative Members**

|                       |                   |
|-----------------------|-------------------|
| Catherine L. Allen    | Melvin Mark       |
| Philip T. Crotty, Jr. | Frank E. Marsh    |
| George W. Hankinson   | Norman Rosenblatt |
| James S. Hekimian     | Philip J. Rusche  |
| John W. Jordan        | Robert A. Shepard |
| Robert H. Ketchum     | Albert Soloway    |

#### **Elected Faculty Members**

|                   |                     |
|-------------------|---------------------|
| Petros Argyres    | Harlan Lane         |
| Arlis Aron        | Parshotam Madan     |
| David Barkley     | Harold Miner        |
| Frederick Blanc   | Irene Nichols       |
| Paul V. Croke     | Barbara Philbrick   |
| Ernest M. DeCicco | John D. Post        |
| Romine Deming     | Nathan Riser        |
| Austin Fisher     | Alae-Eldin Sayed    |
| Alberto Galmarino | Joseph Senna        |
| Gilbert Garland   | Albert Soloway      |
| Victor Godin      | Ralph Troupe        |
| George Goldin     | Elizabeth Van Slyck |
| James Gozzo       | Victor Warner       |
| Arvin Gabel       | Arthur Weitzman     |
| Thomas Henstock   | Robert N. Wiener    |

Richard Higgins  
Christine Hobart  
Norman Kaplan

Joseph J. Zelinski  
Richard Zobel

### **Administrative Committee of the Graduate Schools**

Sidney Herman, *Chairman*  
Francis W. Casey, *Secretary*

Catherine L. Allen  
Alvah K. Borman  
Barbara Burke  
Geoffrey Crofts  
Philip T. Crotty, Jr.  
Joseph M. Golemme  
George W. Hankinson  
James S. Hekimian  
John W. Jordan  
Robert H. Ketchum  
Alan A. Mackey

Melvin Mark  
Frank E. Marsh, Jr.  
Edmund J. Mullen  
John C. O'Byrne  
Barbara Philbrick  
Norman Rosenblatt  
Philip J. Rusche  
Robert A. Shepard  
Albert Soloway  
Jacqueline A. St. Germain

### *Ex Officio*

Arthur E. Fitzgerald, *Dean of Faculty*  
Loring M. Thompson, *Dean of Planning*

### **Committee of the Graduate School of Education**

Philip J. Rusche, *Associate Dean of Education and Director of the  
Graduate School of Education, Chairman*  
Frank E. Marsh, Jr., *Dean of Education*  
Arlis Aron, *Assistant Professor of Speech Pathology*  
F. Andre Favat, *Associate Professor of Education*  
Gilbert C. Garland, *Professor of Education*  
George J. Goldin, *Professor of Special Education*  
Thomas F. Henstock, *Assistant Professor of Education*  
Irene A. Nichols, *Associate Professor of Education*





# the university

Founded in 1898, Northeastern University is incorporated as a privately endowed nonsectarian institution of higher learning under the General Laws of Massachusetts. The State Legislature by special enactment has given the University general degree-granting powers. The University is governed by a Board of Trustees elected by and from the Northeastern University Corporation, which is composed of 178 distinguished business and professional men and women.

From its beginning, Northeastern University has had as its dominant purpose the discovery of community educational needs and the meeting of these in distinctive and serviceable ways. The University has not duplicated the programs of other institutions, but has sought to pioneer new areas of educational service.

A distinctive feature of Northeastern University is its Cooperative Plan, initiated by the College of Engineering in 1909 and subsequently adopted by the Colleges of Business Administration (1922), Liberal Arts (1935), Education (1953), Pharmacy (1962), Nursing (1964); Boston-Bouvé College (1964); the College of Criminal Justice (1967); and by Lincoln College's daytime Bachelor of Engineering Technology program (1971). This educational method enables students to gain valuable practical experience as an integral part of their college program and also provides the means by which they may contribute substantially to the financing of their education. The Plan has been extended to the graduate level in engineering, actuarial science, rehabilitation administration, professional accounting, business administration, and law.

In the field of adult education, programs of study have been developed to meet a variety of needs. University College offers evening courses—offered by the University since 1906—and adult-day courses leading to the bachelor's degree. In addition to offering day undergraduate programs in Electrical Engineering Technology and Mechanical Engineering Technology, Lincoln College offers evening/part-time certificate, associate, and bachelor degree programs in technological areas. All formal courses of study leading to degrees through part-time programs are approved by the Basic College faculties concerned.

## GRADUATE AND PROFESSIONAL SCHOOLS

The nine graduate and professional schools of the University offer day and evening programs leading to the degrees listed.

The Graduate School of Actuarial Science offers the degree of Master of Science in Actuarial Science.

The Graduate School of Arts and Sciences offers the degrees of Master of Arts, Master of Science, Master of Science in Health Science, Master of Public Administration, and Doctor of Philosophy.

The Graduate School of Boston-Bouv  College offers the degree of Master of Science.

The Graduate School of Business Administration offers the degree of Master of Business Administration.

The Graduate School of Criminal Justice offers the degree of Master of Science.

The Graduate School of Education offers the degrees of Master of Education and Doctor of Education and the Certificate of Advanced Graduate Study.

The Graduate School of Engineering offers the degrees of Master of Science, Engineer degree, Doctor of Engineering, and Doctor of Philosophy.

The School of Law offers the degree of Juris Doctor.

The Graduate School of Pharmacy and Allied Health Professions offers the degrees of Master of Science and Doctor of Philosophy.

The Graduate School of Professional Accounting offers the degree of Master of Science in Accounting.

## CENTER FOR CONTINUING EDUCATION

The Center for Continuing Education was established in 1960 to relate the University to the needs of its community in a period of accelerated change. Adult education programs offered by the Center and University College have since been consolidated. Its programs are composed of seminars, conferences, institutes, forums, and a wide variety of special courses designed to serve specific needs. The Division of Special Programs, working cooperatively with trade associations and professional societies, offers a wide variety of programs dealing with current needs and problems. Through its Division of Community Services, working with governmental agencies and community organizations, the Center is becoming increasingly involved in social problems on both the local and national level.

Many of these programs are conducted at Henderson House, North-eastern University's conference center in Weston, Massachusetts.

## RESEARCH ACTIVITIES

The facilities of the University are engaged in a wide variety of basic research projects in business, science, social science, pharmacy, and engineering. These are coordinated by the Dean of Research, whose services are University-wide and available to the faculties of all the Colleges.

Although Northeastern is primarily concerned with undergraduate and graduate instruction, the University believes that the most effective teaching and learning take place in an environment characterized by research activities directed toward extending the frontiers of knowledge.



# buildings and facilities

## MAIN CAMPUS

The main campus of Northeastern University is located at 360 Huntington Avenue in the Back Bay section of Boston. Many of the city's famous cultural, educational, and philanthropic institutions are situated in the Back Bay, including the Museum of Fine Arts, Symphony Hall, Horticultural Hall, the Isabella Stewart Gardner Museum, the Harvard teaching hospitals, the Boston Public Library, and many schools and colleges. Most are within walking distance of Northeastern University.

Major transportation facilities serving the Boston area are Logan International Airport, two rail terminals, bus terminals serving inter- and intrastate lines, and MBTA subway-bus service within the metropolitan-suburban area. There is a subway stop in front of the campus. For motorists, the best routes to the campus are the Massachusetts Turnpike (Exit 22) and Route 9, of which Huntington Avenue is the intown section.

The campus of 47 acres is divided by Huntington Avenue, with the main educational buildings on one side and dormitories on the other. The principal buildings, all of which have been constructed since 1938, are of glazed brick in contemporary classic style. Most are interconnected by underground passageways.

## Ell Student Center

The Carl S. Ell Student Center provides facilities for student recreation and for extracurricular activities. The Alumni Auditorium, with a seating capacity of 1,300, is part of the Center. Also included are special drama facilities, a ballroom, main lounge, fine arts exhibition area, student offices, conference rooms, and a dining area seating more than 1,000.

## Libraries

The University library system consists of the Dodge Library, which is the main library; the Suburban Campus Library at Burlington; the School of Law Library; and divisional libraries for Physics and Electrical Engineering, Chemistry and Biology, Mathematics and Psychology, and Health, Physical and Recreation Education, and Physical Therapy. There are additional subject collections for the Center for Management Development at Andover, Massachusetts, and the Marine Science Institute in Nahant.

The library collections number 360,000 volumes supplemented by some 267,000 titles in microprint, microfilm, and microfiche forms. The collection includes, in addition, some 3,500 periodical titles, 90,000 documents, and 4,600 sound recordings.

### **Cabot Physical Education Center**

The Godfrey Lowell Cabot Physical Education Center is one of the best equipped in New England. The large gymnasium contains four basketball courts. In addition, the Center consists of an athletic cage, a small gymnasium, and a rifle range, as well as administrative offices for the Department of Athletics and for the Physical Education Department of Boston-Bouvé College.

A recent addition to the center, the Barletta Natatorium, houses a 105-foot swimming pool, a practice tank for the crew, handball courts, and shower and dressing facilities.

### **Dockser Hall**

Charles and Estelle Dockser Hall, completed in 1968, houses a large gymnasium, dance studio, motor performance laboratory, college library, community recreation laboratory, folk arts center, dark and music rooms, recreation resources area, locker rooms, offices, classrooms, conference room and lounge, storage facilities, and a research laboratory.

### **Apartments for Graduate Students**

The University maintains a 100-apartment housing unit which accommodates 279 people. Two-, three-, and four-party apartments are available which vary in size from two to four rooms plus bath. Apartments are furnished with beds, chairs, desks, stove, refrigerator, and kitchen table. The cost includes all utilities.

A \$50 deposit is required when making application for the apartments. Applications are available in the Office of University Housing. Students are expected to make such arrangements on a term-to-term basis but may live in the apartments both while on cooperative work assignments and in school if they wish. All reservations are made on a first come, first served basis.

## **SUBURBAN FACILITIES**

### **Suburban Campus**

The Suburban Campus, located near the junction of Routes 128 and 3 in Burlington, Massachusetts, was established to meet the needs of individuals and of industry in the area.

In addition to graduate courses in engineering, physics, mathematics, business administration, science, education, and the arts, portions of undergraduate programs leading to the associate and bachelor's degrees, special programs for adults, and noncredit state-of-the-art programs are offered.

### **Warren Center**

The Warren Center is a practical laboratory for Boston-Bouvé College in outdoor education and conservation, in group practicum, and in camping administration, programming, and counseling. At this Center in Ashland, completed in 1967, there are tennis courts, field hockey and lacrosse fields, waterfront for swimming and boating, overnight camp sites, fields and forests, heated cottages, the Hayden Lodge with a recreation hall, library, crafts shop, dining facilities, and conference accommodations.

### **Henderson House**

The University's conference center, Henderson House, is located in Weston, Massachusetts. The Center for Continuing Education conducts short-term courses, seminars, and special institutes for business, professional, and research groups. Henderson House is 12 miles from the main campus.

### **Marine Science Institute**

The Marine Science Institute at Nahant, Massachusetts, is a research and instructional facility primarily engaged in studies of marine biology and oceanography. The Institute is operated all year, and is about 20 miles northeast of Boston. Many of the courses at this institute are applicable toward an advanced degree in biology or health science.

### **Brockton, Nashua, and Framingham Campuses**

For students residing in southeastern Massachusetts and northeastern Rhode Island, the Graduate School of Business Administration offers a major portion of its M.B.A. Program at facilities in Brockton, Massachusetts. These facilities, made available by the Veterans Administration Hospital, are conveniently located just off Route 24.

Students residing in the southern New Hampshire area may take a major portion of the M.B.A. Program at facilities in Nashua, New Hampshire. These facilities are furnished by Sanders Associates, Inc. and are located in their headquarters on Route 3, just over the Massachusetts line.

For students in the Framingham-Worcester area, a major portion of the M.B.A. Program may be taken at classroom facilities located in Framingham, Massachusetts.





# the graduate school of education

The Graduate School of Education provides programs leading to the Master of Education degree for in-service educators who wish to pursue a specialization and for individuals who wish to pursue the special areas of study indicated below. A nondegree program for those who wish certification as elementary or secondary teachers is also offered.

Individuals who possess or are eligible for teaching certificates may earn the Master of Education degree in the areas of curriculum and instruction, elementary and secondary administration, emotional disturbance, generic special educator, mental retardation, multiply handicapped, and preschool handicapped.

Those individuals who do not possess a teaching certificate may specialize in the areas of career education college counseling, community counseling, cooperative education, rehabilitation counseling, school counseling, educational research, human development, instructional technology, occupational education, rehabilitation administration, speech pathology or audiology, and special education community personnel.

Programs of study leading to the Certificate of Advanced Graduate Study in the areas of counseling, educational administration, rehabilitation, and special education are offered to those individuals who presently hold a master's degree.

The Graduate School of Education also offers a Doctor of Education (Ed.D.) program in Leadership: Administration and Supervision. Being offered jointly by the Departments of Counselor Education, Educational Administration, and Special Education and Rehabilitation Administration, students may concentrate in the areas of: school administration, rehabilitation administration, pupil personnel administration, student personnel administration, administration of higher education, administration of cooperative education, and special education administration. Students must hold a master's degree in order to apply to this program.

## GENERAL REGULATIONS

The general regulations and minimum requirements for all graduate programs are established by the Northeastern University Graduate Council. In some matters the committee of each graduate school is allowed discretion to establish regulations within limits defined by the council. The regulations and academic requirements which follow have been formulated in accordance with this general policy.

### Registration

Students must register within the period listed on the school calendar. Time and place of registration will be announced prior to each period.

### Residence

All work for advanced degrees must be completed at the University unless approval has been obtained from the Director of the Graduate School for work taken elsewhere. Students who are in residence and are using the facilities of the University must register for such work.

### Grading System

The performance of students in graduate courses will be recorded by the instructor by use of the following grades:

**A Excellent**

This grade is given to those students whose performance in the course has been of very high graduate caliber.

**B Satisfactory**

This grade is given to those students whose performance in the course has been at a satisfactory level.

**C Fair**

This grade is given to those students whose performance in the course is not at the level expected in graduate work.

**F Failure**

This grade is given to those students whose performance in the course is unsatisfactory.

In addition, the following letter designations are used:

**I Incomplete**

This grade is given to those students who fail to complete the work of the course.

**L Audit without credit.**

**S Satisfactory without quality designation.**

U Unsatisfactory without quality designation.

These two grades are used for the first quarter of a two-quarter sequence in which the grade for the second quarter applies to both the first and second quarters of the sequence.

The I grade will be changed to a letter grade upon removal of the deficiency which caused the grade of I to be reported. Deficiencies must be made up within the quarter following that for which the grade of I is received unless an extension of time is granted by the instructor. However, such extension of time may not exceed two additional consecutive calendar quarters.

Any student who wishes to take a final make-up examination must obtain permission of the Director of the Graduate School by the second week of the quarter succeeding that in which the examination was missed. The make-up examination must be taken in that succeeding quarter unless circumstances warrant permission of the Director to defer it to one of the next two quarters.

### **Auditing**

A student may audit a course without credit by obtaining, prior to registration, the written approval of the instructor of the course involved and by presenting this permit at the Office of the Graduate School of Education. No change either to or from the audit status may be made after the first day of classes. Tuition for an audit course is the same as for a course taken for credit.

### **Class Hours and Credits**

All credits are entered as quarter hours. A quarter hour of credit is equivalent to three-fourths of a semester hour credit. The academic calendar at the front of this bulletin should be consulted in order to determine the opening and closing dates of each quarter. It should be noted that most classes meet either in the late afternoon or evening.

### **Continuity of Program**

Students are expected to maintain continuous progress toward a degree. Any student who has been admitted to a degree program, has completed at least one course, but has not attended for a period of one year, must notify the Office of the Graduate School of Education prior to additional registration. In addition, he must meet with his program adviser to make any necessary program adjustments.

### **Withdrawals**

In order to withdraw from a course, a student must fill out an official

withdrawal form obtained at the Registrar's Office or at the Burlington Campus Office. Withdrawals may be made through the ninth class meeting of the quarter. Students will be withdrawn as of the date on which they fill out the form. Ceasing to attend a class or notifying the instructor does not constitute an official withdrawal. See section on financial information for information on refunds.

### **Changes in Requirements**

The continuing development of the graduate school forces frequent revision of curricula. In every new bulletin some improvements are indicated. When no hardship is imposed on the student because of changes, and when the facilities of the school permit, the student is expected to meet the requirements of the latest bulletin. If the student finds it impossible to meet these requirements, the bulletin for the year in which he entered becomes the binding one.

### **Application for the Degree**

If a commencement card is not filed with the Registrar's Office on or before the applicable date listed on the calendar, there is no assurance that the degree will be granted in that particular year even though all other requirements have been fulfilled.

### **Honor Society**

Northeastern University has on campus the Kappa Zeta Chapter of Kappa Delta Pi. A national honor society in education, Kappa Delta Pi was founded in 1911 at the University of Illinois. Kappa Zeta Chapter was installed on May 29, 1964.

To be considered for membership, graduate students must be degree candidates in the College of Education and have completed at least six courses (24 quarter hours) with a cumulative average of at least 3.5, and have no C grades on their graduate records.

Applications for membership and further information may be received from the Office of the Dean, College of Education, Northeastern University, Boston, MA 02115.

### **Supporting Services**

The College of Education operates or coordinates with other agencies in the operation of certain bureaus, clinics, and offices which support and enrich the academic programs. Graduate students may find some of these services to be of interest and assistance while others may be suggested as sources of information or practical experiences. Among these services are those discussed in the following paragraphs.

The Bureau of Educational Field Services, located in Cushing Hall (102 The Fenway), provides a wide variety of offerings to our graduate students as well as to school systems and other educational agencies throughout New England. These offerings include special off-campus programs for our graduate students, both credit and noncredit; credit and noncredit in-service training for professional school personnel, offered in local communities; special noncredit workshops for parent and para-professional groups; and program evaluation, research projects, surveys, educational planning services, and consultant services.

Anyone interested in obtaining more information about the Bureau should contact the Office of the Director of the Bureau at 617-437-3297, or visit 118 Cushing Hall.

Northeastern University's Speech and Hearing Clinic, located in 133 Forsyth Building, provides diagnostic and therapeutic services for both University students and school-age community children insofar as staff and facilities allow. The Clinic is accredited by the Professional Services Board of the American Speech and Hearing Association.

The Instructional Materials Center (formerly the Curriculum Library), located in the Kennedy Building (104 The Fenway), contains a variety of materials and resources relating to a large number of programs and task areas of elementary and secondary schools. Use of this facility is limited to staff and students of the College of Education.

Northeastern University's Reading and Learning Clinic, located in Cushing Hall, provides diagnostic and corrective services in reading for both University students and school-age community children insofar as staff and facilities allow.

The New England Rehabilitation Research Institute, located in the United Realty Building, conducts rehabilitation studies on the problems of motivation and dependency and publishes reports pertaining to the area of rehabilitation. A materials resources library in rehabilitation research is housed in the same building as the Department of Rehabilitation and Special Education.

The Center for Educational Development, located in Cushing Hall, works with community agencies in developing and implementing innovative educational programs, particularly in areas, both urban and rural-isolated, which lack substantial financial resources.

In addition, the College of Education utilizes the resources, materials, and facilities of other University-wide bureaus such as the Office of Educational Resources, an important component of which is the Center for Programmed Instruction.



# financial information

## FINANCIAL OBLIGATIONS

### Tuition

Tuition for master's degree candidates, CAGS candidates, doctoral candidates, and special students is \$49 per quarter hour of credit. Tuition for audited courses is the same as for courses taken for credit. There is a special tuition charge of \$550 for the following: 51.805, Student Teaching; 51.873 and 51.875, Reading Clinic I & II; 53.805-806, Counseling Practicum; 53.840-841, Advanced Field Work; 53.843-844, School Psychology Field Work; 55.813, Advanced Clinical Practice; 56.850-851, Field Work and Student Teaching; 56.853-854, Practicum and Seminar; 56.960, Practicum in Rehabilitation Administration; Thesis.

There is a special tuition charge of \$310 for the following: 52.843, Administrative Internship; Counselor Education Interns enrolled in the Boston School System.

The tuition charge for the doctoral dissertation is \$500, to be paid when registration is made for the dissertation. At the completion of formal course work for the doctorate, a dissertation continuation fee of \$50 per quarter will be charged until completion of the dissertation.

Tuition statements are mailed to students by the Bursar's Office and are payable by check to Northeastern University on or before the date specified.

Tuition rates and fees are subject to revision by the Board of Trustees at any time.

### Fees

An Application Fee of \$15 (nonrefundable) is charged all students when they apply for admission to the Graduate School of Education. No application papers will be processed until this fee has been received. Checks should be made payable to Northeastern University and sent to the Graduate School of Education, 102 The Fenway, Boston, Mass. 02115.

Other fees include a charge of \$10 for late payment of tuition; a fee of \$2 for deferred tuition (with approval of Bursar); a final examination make-up fee of \$5; a fee of \$25 for all degree candidates, payable before commencement by the applicable date listed on the academic calendar.

For full-time students there is a charge of \$12.50 per quarter for the services available in the student center. The fee for teaching assistants and research fellows is \$6.25 each quarter. All part-time students on the Huntington Avenue campus are charged \$ .75 a quarter.

All full-time students, including those with assistantships and fellowships, will pay a nonrefundable university health services fee of \$90 each year. This fee will provide Blue Cross-Blue Shield coverage and entitle the student to the medical care furnished by the University Health Service.

All financial obligations to the University must be discharged by graduation.

### **Refunds**

Tuition refunds will be granted only on the basis of the date appearing on the official withdrawal form filed by the student. Nonattendance does not constitute official withdrawal. Questions regarding refunds should be discussed with the Bursar's Office.

Refunds will be granted in accordance with the following schedule:

| Amount of Refund                  |                       |
|-----------------------------------|-----------------------|
| Official Withdrawal Filed Within: | Percentage of Tuition |
| First week of quarter             | 100                   |
| Second week of quarter            | 75                    |
| Third week of quarter             | 50                    |
| Fourth week of quarter            | 25                    |

### **FINANCIAL AID**

The Office of Financial Aid offers two types of assistance to graduate students: the National Direct Student Loan and Work-Study. All awards are based on financial need. Aid granted from these programs sponsored by the Federal Government is dependent upon the amount of funds allocated to Northeastern University.

#### **National Direct Student Loan**

Under the National Direct Student Loan program, students may be allowed to borrow as much as \$1500 per academic year; however, the total amount borrowed must not exceed \$10,000 for the student's entire undergraduate and graduate program. Repayment and interest on these loans do not begin until nine months after the student ceases to carry



at least a half-time academic load. The repayment of the principal may be extended over a ten-year period with an interest rate of 3% per annum.

### **College Work-Study Program**

The College Work-Study Program is sponsored by the Federal Government. It is designed to give students an opportunity to earn as much as \$3.50 per hour working in jobs on or off campus in public or private nonprofit organizations. This program is administered solely by the Office of Financial Aid and is not to be confused with the University's cooperative education program.

### **Guaranteed Student Loan Program**

A prime means of financial assistance is the Guaranteed Student Loan Program. Because of the easy availability of this loan relative to other types of financial assistance, it is recommended that all applicants for aid first seek assistance from this source. Students may receive guaranteed loans of up to \$2500 per academic year from their local banks. Repayment of the principal and interest need not begin until nine months after the student ceases to carry at least a half-time academic load.

Northeastern University is a participant in the Graduate and Professional School Financial Aid Service (GAPSFAS). All applicants for financial aid must file a GAPSFAS form in order to be considered. This form may be obtained from the financial aid officer at the institution which the student now attends or from the Northeastern University Office of Financial Aid. All sections of the GAPSFAS form must be completed and sent to the Graduate and Professional School Financial Aid Service, Box 2614, Princeton, New Jersey 08540. No decision on an application for financial aid will be made until the GAPSFAS form is received.

Only students who have been officially accepted as degree candidates to a graduate school of Northeastern University may apply for financial aid. The University does not award financial assistance to students who are not citizens or permanent residents of the United States.

The Office of Financial Aid does not award Graduate Assistantships or Fellowships. For further information regarding such assistance, students should contact their graduate school office.

### **Graduate Administrative Assistantships**

Some University departments offer the graduate student an opportunity for remission of tuition and a stipend in return for half time spent in assisting with nonteaching, administrative duties. In all cases the student must register for a half-time academic load. It is assumed that applicants for such assistantships will be enrolled in a two-year program.

### **Tuition Assistantships**

These appointments offer tuition waiver only. Graduate students given this type of appointment are assigned duties in the department requiring an average of 8 hours per week. They must register for a full-time academic load.

### **Teaching Assistantships**

Graduate students given this type of appointment assist in the work of instructional departments or other offices of the University. The appointee may be assigned to class instruction, laboratory supervision, correcting papers and proctoring examinations. Including necessary preparation time, assigned duties require about 18 to 20 hours per week.

The student must register for a half-time academic load. It is assumed that applicants for such assistantships will be enrolled in a two-year program.

### **Traineeships**

Graduate students given these appointments must devote full time to graduate work in accordance with the stipulation of the appointment. These appointments are made from traineeships available from NASA, NSF, NDEA, and other government grants to the University. They may be for 9 to 12 months.

### **Appointments**

Appointments to fellowships and assistantships are ordinarily announced no later than April 15 for the following academic year or summer. Appointments are for a maximum of one year and are not automatically renewed. Students who hold assistantships are expected to devote full time to their studies and the duties of the award. They may not accept outside employment without the consent of their faculty adviser and the Director of the Graduate School.

### **Martin Luther King, Jr., Scholarships**

Established in 1969 in memory of the late Rev. Martin Luther King, Jr. Awards are made as openings occur to qualified minority graduate students who show financial need and are accepted to full-time study in the graduate schools of the University. Stipends will cover tuition and all fees.

### **Dr. Reubin J. Margolin Memorial Scholarship Fund**

The Dr. Reubin J. Margolin Memorial Scholarship Fund was established in 1973 through the generosity of the family and friends of Dr. Reubin J.

Margolin, an outstanding and dedicated individual and friend who, at the time of his death on April 6, 1972, was Chairman of the Department of Rehabilitation and Special Education at Northeastern University.

The income from the Dr. Reubin J. Margolin Memorial Scholarship Fund is awarded annually to a deserving student admitted to or enrolled in the College of Education or the Graduate School of Education and majoring in Rehabilitation and/or Special Education. Recipients must demonstrate financial need as well as the personal and professional qualities exemplified by Dr. Margolin.

### **Dormitory Proctorships**

A number of proctorships in men's dormitories on or near the Huntington Avenue campus are available each year. Appointments carry a minimum compensation of room and board. Further information and application forms may be obtained from the Associate Dean of Students for Housing, 203 Ell Student Center.



# faculty

- Arlis Aron, B.A., M.Ed., *Assistant Professor of Speech Pathology*  
 Joseph C. Aurelia, B.A., M.A., *Assistant Professor of Speech Pathology*  
 Robert E. Bachelder, B.S.Ed., M.A.Ed., Ed.D., *Lecturer in Education*  
 Ronald E. Baptiste, A.B., Ed.M., Ed.D., *Associate Professor of Education*  
 Joseph E. Barbeau, B.S., M.Ed., Ed.D., *Associate Professor of Education*  
 Gloria D. Bernheim, B.A., M.A., Ph.D., *Assistant Professor of Education*  
 George W. Best, B.S., A.M., *Lecturer in Education*  
 Richard Brown, B.S., M.Ed., *Lecturer in Education*  
 Wendell R. Brown, B.A., LL.B., D.S.S., *Associate Professor of Education*  
 Nicholas J. Buffone, B.A., M.Ed., Ph.D., *Associate Professor of Education*  
 Leslie Burg, B.S., M.Ed., Ed.D., *Associate Professor of Education*  
 Robert S. Butters, A.B., M.Ed., Ed.D., *Associate Professor of Education*  
 Russell J. Call, B.Ed., M.A., Ed.D., *Associate Professor of Education & Director of Field Placement*  
 Tema G. Carter, A.B., M.A., Ph.D., *Associate Professor of Education*  
 John F. Chaves, A.B., A.M., Ph.D., *Lecturer in Education*  
 Thomas H. Clark, B.A., M.A., *Assistant Professor of Education*  
 William M. Coan, B.S., M.S., Ph.D., *Assistant Professor of Speech Pathology*  
 Donald Cochran, B.A., M.A.T., *Lecturer in Education*  
 Gregory C. Coffin, A.B., Ed.M., Ph.D., *Professor of Education*  
 Melvin E. Cohen, B.S., Ed.M., C.A.G.S., D.Ed., *Lecturer in Education*  
 David R. Cook, B.S.Ed., M.S., Ed.D., *Professor of Education*  
 Donald F. Crowe, B.S., M.Div., *Lecturer in Education*  
 Elizabeth Cusick, B.A., M.Ed., C.A.G.S., *Lecturer in Education*  
 Thomas E. Cyrs, Jr., A.B., Ed.M., Ed.D., *Assistant Professor of Education and Director of Division of Instructional Systems Development*  
 Richard L. Dill, B.A., M.Ed., C.A.G.S., *Lecturer in Education*  
 Irvin Doress, B.A., M.A., Ed.D., *Associate Professor of Education*  
 E. Lawrence Durham, A.B., M.A., *Professor of Education*  
 F. Andre Favat, A.B., Ed.M., Ed.D., *Associate Professor of Education*  
 Robert J. Ferullo, B.S.B.A., Ed.M., Ed.D., *Professor of Speech Pathology and Audiology and Acting Chairperson Department of Speech Pathology and Audiology*  
 William G. Freeman, B.A., Ed.M., C.A.S., *Lecturer in Education*  
 Gilbert C. Garland, B.S., Ed.M., Ed.D., *Professor of Education*  
 Mina B. Ghattas, B.A., M.Ed., Ph.D., *Associate Professor of Education and Director of Division of Instructional Media Systems*  
 George J. Goldin, B.S., M.S., Ph.D., *Professor of Special Education*  
 Michael A. Goulde, B.S., M.S., *Lecturer in Education*  
 Bonnie Greenberg, B.S., M.S., *Assistant Professor of Speech Pathology*  
 E. Vaughn Gulo, A.B., M.A., Ed.D., *Associate Professor of Education*  
 Charles F. Haley, B.S., M.Ed., *Assistant Dean of Education*  
 Cheryl C. Hanks, A.B., A.M., Ph.D., *Assistant Professor of Education*  
 Thomas F. Harrington, B.A., M.Ed., Ph.D., *Professor of Education*

- Thomas F. Henstock, B.A., M.A., Ed.M., Ed.D., *Assistant Professor of Education*  
 John D. Herzog, B.A., M.A.T., Ph.D., *Professor of Education and Chairperson,  
 Department of Foundations of Education*  
 Fred Hinman, M.D., *Lecturer in Education*  
 Melvin Howards, B.S., M.A., Ph.D., *Professor of Education and Chairperson,  
 Department of Curriculum and Instruction*  
 Sherry R. Israel, B.A., M.A., Ph.D., *Lecturer in Education*  
 Maurice Kaufman, B.S., M.S., Ph.D., *Associate Professor of Education*  
 Alvin Kent, B.A., M.Ed., *Assistant Professor of Education and Director of Office  
 of Educational Resources*  
 Daniel C. Kielson, Ed.B., Ed.M., Ed.D., *Lecturer in Education*  
 Blanche Korngold, A.B., Ed.M., C.A.S., *Assistant Professor of Education*  
 Albert Kovner, B.S., M.A., Ed.D., *Associate Professor of Education*  
 Louise LaFontaine, A.B., M.A., Ed.M., Ed.D., *Assistant Professor of Special  
 Education*  
 Mary J. Lee, B.A., M.Ed., *Associate Professor of Education*  
 Robert S. Levine, B.S., M.Ed., M.B.A., Ed.D., *Lecturer in Education*  
 Marcus Lieberman, B.S., M.S., Ph.D., *Lecturer in Education*  
 Thomas F. Luce, B.Ph., S.T.L., M.Ed., *Lecturer in Education*  
 Matthew H. Luzzi, B.A., M.Ed., C.A.G.S., Ed.D., *Professor of Education  
 and Chairperson, Department of  
 Rehabilitation and Special  
 Education*  
 Mervin D. Lynch, B.S., M.S., Ph.D., *Professor of Education*  
 John Maguire, A.B., M.Ed., *Assistant Professor of Education*  
 Frank E. Marsh, Jr., A.B., Ed.M., Ed.D., *Dean of Education*  
 Wilbert J. McClure, B.A., M.A., Ph.D., *Assistant Professor of Education*  
 JoAnne S. McKay, A.B., Ed.M., *Assistant Professor of Special Education*  
 Robert C. McLean, A.B., M.S., Ed.D., *Associate Professor of Education*  
 Joseph Meier, Ed.M., Ed.D., *Associate Professor of Education*  
 Harold A. Miner, B.S., Ed.M., Ed.D., *Associate Professor of Education and Director,  
 Bureau of Field Services*  
 Katherine M. Newman, B.S.Ed., O.T.R., Ed.M., C.A.G.S., *Instructor in Education*  
 Irene A. Nichols, B.S., Ed.M., Ed.D., *Associate Professor of Education*  
 Alan C. O'Hare, B.A., M.Ed., *Lecturer in Education*  
 Barbara F. Okun, B.A., M.A., Ph.D., *Assistant Professor of Education and  
 Acting Chairperson, Department of  
 Counselor Education*  
 Arthur J. O'Shea, B.A., M.A., Ed.M., Ph.D., *Lecturer in Education*  
 Colin Painter, B.A., A.P.D.P., Ph.D., *Lecturer in Education*  
 Sandra M. Parker, B.A., Ed.M., Ed.D., *Associate Professor of Education*  
 William G. Quill, B.S., M.Ed., Ed.D., *Associate Professor of Education*  
 Robert W. Read, A.B., M.A., Ed.D., *Associate Professor of Education*  
 Robert B. Redden, B.S., M.Ed., Ed.D., *Assistant Professor of Audiology*  
 Susan E. Rindler, B.A., M.S., *Instructor in Education*  
 Charles F. Ritch, Jr., A.B., A.M., Ed.D., *Professor of Education and Chairperson,  
 Department of Educational Administration*  
 Phyllis T. Ritvo, B.A., M.Ed., *Lecturer in Education*  
 Stephan B. Ross, B.A., M.Ed., C.A.G.S., *Lecturer in Education*  
 Philip J. Rusche, A.B., B.S., M.A., Ed.D., *Associate Dean of Education and  
 Director of the Graduate School  
 of Education*  
 Thomas Francis Ryan, Jr., B.A., M.S.Ed., *Lecturer in Education*  
 Ray F. Saari, B.A., M.Div., M.S.W., *Lecturer in Education*  
 Tommie M. Samkange, B.S., M.S., Ph.D., *Lecturer in Education*  
 Judith D. Samuels, B.Ed., M.A., *Lecturer in Education*

Barbara Schram, B.A., M.A., M.S.W., Ed.D., *Assistant Professor of Education*  
Harold F. Schuknecht, S.B., M.D., *Lecturer in Education*  
James F. Scorzelli, B.S., M.A., Ph.D., *Assistant Professor of Education*  
Marilyn Spiegel, B.A., M.A., *Lecturer in Education*  
Deanna Spielberg, A.B., M.Ed., Ed.D., *Assistant Professor of Special Education*  
Kristine E. Strand, B.S., M.A., *Assistant Professor of Speech Pathology*  
Lois E. Stryker, B.A., M.P.A., *Lecturer in Education*  
Paul H. Tedesco, A.B., A.M., Ph.D., *Associate Professor of Education*  
Benjamin Tessler, LL.B., M.Ed., *Lecturer in Education*  
Newton K. Von Sander, A.B., Ed.M., Ed.D., *Lecturer in Education*  
Dorothy A. Weber, B.A., M.Ed., *Assistant Professor of Special Education*  
Martin J. Wheeler, A.B., M.Ed., *Lecturer in Education*  
James W. Wilson, B.S., M.A., Ph.D., *Research Professor, Cooperative Education*  
Wesley G. Woll, B.S., M.D., *Lecturer in Education*  
Alvin D. Zalinger, B.S., M.A., *Associate Professor of Education*

# programs of the graduate school of education

## MASTER OF EDUCATION

### Professional Specializations

#### School and College Counseling Programs

- Elementary School Counseling

- Secondary School Counseling

- Career Education Specialist

- College Counseling

- Student Personnel

- Cooperative Education Coordinator

#### Community and Rehabilitation Counseling Programs

- Community Mental Health Counseling

- Rehabilitation Counseling

- Community Services Counseling

#### Curriculum and Instruction

- English-Language Arts

- General Academic

- Reading

- Science-Mathematics

- Social Studies

#### Educational Administration

- Elementary and Secondary Administration

- Instructional Technology

- Occupational Education

#### Educational Research

#### Human Development

#### Rehabilitation Administration

#### Special Education

- Emotional Disturbance—Learning Disabilities

- Generic Special Educator

- Mental Retardation—Learning Disabilities

- Multiply Handicapped

- Preschool Handicapped

- Special Education Community Personnel

#### Speech Pathology and Audiology

- Audiology

- Speech Pathology



## **Nondegree Program for Certification of Elementary and Secondary Teachers**

### **CERTIFICATE OF ADVANCED GRADUATE STUDY (CAGS)**

Counselor Education  
 Pupil Personnel Services Administration  
 Community Mental Health  
 Rehabilitation Counseling  
 School Psychology  
 Educational Administration  
 Cooperative Education  
 Educational Administration  
 Higher Education  
 Instructional Technology  
 Rehabilitation and Special Education Administration

### **DOCTOR OF EDUCATION**

Counselor Education  
 Pupil Personnel Administration  
 Student Personnel Administration  
 Educational Administration  
 Administration of Cooperative Education  
 Administration of Higher Education  
 School Administration  
 Rehabilitation and Special Education  
 Rehabilitation Administration  
 Special Education Administration

### **MASTER OF EDUCATION DEGREE**

#### **Admission to Degree Candidacy**

An applicant must have earned a bachelor's degree from an accredited institution and must complete all admissions procedures as described.

An applicant for graduate study in a master's degree program or a CAGS program should have on file in the office of the Graduate School of Education three weeks (two months for full-time) prior to the beginning of classes in any given quarter:

1. Two completed application forms.
2. Two official transcripts from all colleges or universities attended.

3. References as follows:
  - a. If no teaching experience, three letters of recommendation from individuals acquainted with the applicant's scholastic, professional, or intellectual ability.
  - b. If teaching experience (beyond student teaching), one reference from the current or most recent supervisor.
4. An official copy of the Miller Analogies Test score (MAT).
5. Graduate Record Examination scores (aptitude test only) for applicants with 25% or more pass-fail grades.
6. For CAGS applicants, a record of an interview with the chairman of the department to which they are applying.
7. For applicants whose native language is not English, an official copy of the results of the Test of English as a Foreign Language (TOEFL).

The Graduate School of Education may require a preadmission conference with any applicant. Applicants may at any time request a conference with the Director of the Graduate School of Education or his designate.

### **Application Fee**

All applications for admission must be accompanied by an application fee (nonrefundable) of \$15. No application will be processed until the fee has been received by the Graduate School of Education. Checks should be made payable to Northeastern University and sent to the Graduate School of Education, 102 The Fenway.

### **Confirmation**

Applicants must confirm their acceptance to a program within the designated period of time. If confirmations are not received, places in the program will be offered to other applicants.

Students who have confirmed their acceptance to a program but who have not initiated their programs within four quarters of admission will be withdrawn from the Graduate School of Education.

### **Full-time Study**

A full-time student must take three courses in all quarters except the summer session, during which he must take a minimum of two courses. Enrollment in an additional course in any quarter must be approved by the adviser.

### **Part-time Study**

A part-time student may enroll in a maximum of two courses in any given quarter.

## Program Selection and Registration

Upon acceptance as a degree candidate, the student will be assigned an adviser in his major area of study. After notification of acceptance by the Graduate School of Education, the student must confer with the adviser regarding his program of studies and initial course registration. The student's initial program and any subsequent changes may develop only as a result of the written recommendation of the adviser.

Initial registration will be allowed only upon presentation of a "Permit to Register" card.

## Special Student Status

Applicants who have earned a bachelor's degree from an accredited institution and who acknowledge that they do not wish to pursue a degree may be accepted as special students. Special students may register for a maximum of three courses, one per quarter, provided that they submit an application form, accompanied by an application fee of \$15, and an official transcript, three weeks prior to the beginning of classes. Academic credit earned in such study may not be used to fulfill degree requirements in the Graduate School of Education unless the applicant is accepted as a degree candidate and the courses are applicable to his program. Special students may be considered for degree candidacy only upon full presentation of application materials and a formal petition to the Director of the Graduate School of Education.

## Academic Classification

1. *Regular*      Applicants who meet in full the criteria for immediate matriculation are classified as regular students.
2. *Provisional*      Some applicants who do not meet regular admissions standards may be admitted as provisional students. Such students must maintain a B average in their first twelve quarter hours of work in order to continue in the graduate program. Provisional students admitted for part-time study may take only one course in their first quarter of study.
3. *Special*      See above.

## Programs of Study

The curricula of the programs for the Master of Education degree are given on pages 51-75.

Programs are available for students with or without regular teaching certification. Those with certification may major in the professional specializations listed on page 51.

Students without certification may pursue a Master of Education degree program for which certification is not mandatory (as indicated on page 51) or if able to devote full time to graduate study, may apply for a combined program as described on page 77.

A nondegree certification program for elementary and secondary teachers is available as described on pages 76 and 77.

### **Comprehensive Examination**

A comprehensive examination may be required by a department. Unsatisfactory performance in such an examination constitutes grounds for withholding the degree.

### **Academic Requirements**

In order to qualify for the Master's Degree in Education, an average grade of B must be obtained in all courses. No additional course credits may be allowed in order to satisfy the B average required for the degree.

No student who receives a grade of less than B in three or more courses will be permitted to continue in the program. A student who has accumulated two grades of C from the same faculty member may not register for a third course with this faculty member.

A student who receives a grade of F in a course must make up the course in accordance with the recommendation of his adviser. A student who receives a grade of F in two courses will not be permitted to continue in the program.

### **Credit and Course Requirements**

In satisfying the requirement for a minimum of 40 quarter hours, a student's program must include at least 12 courses which apply to the degree.

### **Transfer Credits**

A maximum of 12 quarter hours of credit obtained at another institution may be accepted toward the master's degree provided that the credits are recommended for transfer by the student's adviser, consist of work taken at the graduate level for graduate credit, carry grades of A or B, have been earned at an accredited institution, and have not been used toward any other degree. Students should petition the Director of the Graduate School in writing for all transfer credit by completing the necessary form, obtainable from either the office of the Graduate School of Education or the faculty adviser. The completed form must be submitted to the Director of the Graduate School of Education along with an official transcript and an excerpt from the catalog describing the course.

No transfer form will be considered complete without the signature of the student's adviser or department chairman. Grades on transfer credits may not be used for the purpose of obtaining the academic average necessary for completion of the degree requirements.

### **Time Limitations**

Course credits earned in the program of graduate study, or accepted by transfer, are valid for a maximum of seven years.

## **NONDEGREE PROGRAM FOR CERTIFICATION OF ELEMENTARY AND SECONDARY TEACHERS**

### **Admission**

Applicants for this program must follow the admissions procedures as described on page 43 and meet the admissions requirements for the Master of Education degree. In addition, applicants whose backgrounds may not include an approved course in such areas as human development or learning must take such a course either before they enter the program or before student teaching. Candidates for secondary certification must have completed, before admission, at least 36 quarter hours of courses in the field in which they are preparing to teach, with a QPA for all courses taken in that field of at least 2.000.

### **Academic Requirements**

In order to qualify for Student Teaching, students must have completed the four required courses with a B average, and be recommended by their major adviser.

A student may repeat a course in which he has received a grade of C or F, and the second grade will govern. However, only one course may be repeated on this basis.

## **CERTIFICATE OF ADVANCED GRADUATE STUDY (CAGS) PROGRAM**

### **Admission**

An applicant for the Certificate of Advanced Graduate Study in Counselor Education, Educational Administration, and Rehabilitation and Special Education must hold a master's degree from an accredited institution and file supportive materials in accordance with guidelines which will be provided upon request. Inquiry, specifying the program for which information is sought, should be addressed to the Director of the Graduate School of Education.

Applicants for CAGS programs must have application materials on file

in the office of the Graduate School of Education three weeks (two months for full-time) prior to the beginning of classes in any given quarter.

### **Academic Requirements**

In order to qualify for the Certificate of Advanced Graduate Study, an average grade of B must be obtained in all courses. No additional course credits may be allowed in order to satisfy the B average required for the certificate.

No student who receives a grade of less than B in three or more courses will be permitted to continue in the program. A student who has accumulated two grades of C from the same faculty member may not register for a third course with this faculty member.

A student who receives a grade of F in a course must make up the course in accordance with the recommendation of his adviser. A student who receives a grade of F in two courses will not be permitted to continue in the program.

### **Transfer Credits**

See requirements under master's degree on preceding pages.

### **Time Limitations**

Course credits earned in the program of graduate study, or accepted by transfer, are valid for a maximum of seven years.

### **Qualifying and Comprehensive Examinations**

Students may be required to take a qualifying examination. All students are required to satisfactorily complete a comprehensive examination in order to qualify for the Certificate of Advanced Graduate Study.

## **DOCTOR OF EDUCATION DEGREE**

### **Admission**

Applicants for admission to the Doctor of Education degree program must file evidence of a master's degree or its equivalent from an accredited institution and such other materials as required by the Graduate School of Education. Materials will be accepted from applicants who are currently enrolled in graduate studies and who expect to obtain the master's degree within two terms of the time of application.

Students who have graduated from or are currently enrolled as regular CAGS students in the Graduate School of Education may apply for the

doctoral degree program. Although most CAGS course work is applicable, there are different admissions criteria and formal application must be made. Conversely, regular doctoral students who either choose not to complete the doctoral program or are disqualified from continuing, may make formal application to transfer to the CAGS program.

As part of the application procedure, the applicant must declare a major field of specialization, submit a written statement of purpose for pursuing doctoral study, and if requested, meet with an admissions committee for further evaluation. Applications to the Doctor of Education degree program will be acted upon twice yearly, for September or March (Fall or Spring Quarter matriculation). Application materials must be completed at least a quarter prior to the time the student is seeking admission or the candidate's application will automatically be forwarded for inclusion in the next action period. Within this period candidates will be informed of their admission status as soon as possible.

### **Classification and Degree Candidacy**

Students taking advanced graduate work are classified as follows:

1. Doctoral Student

Students in this classification have been accepted for doctoral study, but have not yet passed the qualifying examination.

2. Doctoral Degree Candidates

Students in this classification have completed forty-eight quarter hours of graduate work and have passed the qualifying examination.

### **Academic Requirements**

In order to qualify for the Doctor of Education degree, an average grade of B must be obtained in all courses. No additional course credits will be allowed in order to satisfy the B average for the degree. No student who receives a grade of less than B in three or more courses will be permitted to continue in the program. A student who has accumulated two grades of C from the same faculty member may not register for a third course with this faculty member. A student who receives a grade of F in a course must make up this course in accordance with the recommendation of the adviser. A student who receives a grade of F in two courses will not be permitted to continue in the program.

### **Qualifying Examination**

A qualifying examination must be taken by each doctoral student seeking degree candidacy. The purpose of the examination is to evaluate the student's general understanding of the field of specialization. The

qualifying examination must be taken before the completion of forty-eight quarter hours of doctoral study.

### **Comprehensive Examination**

After completion of all formal course work, the doctoral degree candidate must satisfactorily demonstrate, by means of a comprehensive examination, breadth and depth of knowledge in the area of specialization, as well as general professional understanding and comprehension of major issues in related fields.

### **Dissertation**

As part of the degree program, each candidate must complete a dissertation which embodies the results of extended, creative, independent research and proper evaluation and interpretation of the results. A Dissertation Committee, made up of a major adviser and at least two other faculty members, must approve the dissertation.

### **Final Oral Examination**

The final oral examination will be taken after completion of all other requirements for the doctoral degree. The examination will be held at least three weeks before the Commencement at which the degree is to be awarded and the results of the examination will be made available immediately to the student.

The substance of the final oral examination will include the subject matter of the doctoral dissertation and significant developments in the area of the student's specialization.

### **Transfer Credit**

In satisfying the course requirements beyond those required for the master's degree, the adviser may recommend to the Committee of the Graduate School of Education transfer credit up to a maximum of twenty-five percent of such course requirements.

### **Time Limitation**

After admission to degree candidacy, a maximum of five years will be allowed for completion of the degree requirements. Any extension of this time must be approved by the Committee of the Graduate School of Education.

### **Financial Aid**

A limited amount of financial aid is available. Inquiries regarding this matter should accompany application.



# fields of study

## PROGRAMS IN PROFESSIONAL SPECIALIZATIONS

### Master of Education

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\*Teaching certification not mandatory.

All students must complete one of the programs as outlined below. In most cases, the sequence is designed to be very flexible. Any variations or changes must have the prior recommendation of the major adviser and approval of the Director of the Graduate School of Education.

## MASTER OF EDUCATION CORE REQUIREMENT

### Required of all candidates:

#### *Area I — Research*

##### 50.815 Research Design in Education

Entrance into this course must be preceded by satisfactory completion of a proficiency examination in statistics administered by the Center for Programmed Instruction or by satisfactory completion of 50.841 Introduction to Educational Statistics. Important: 50.815 must be included among the first six courses taken by each student. (See further information under the course description.)

**All candidates must complete at least one course in each of two of the following areas:**

#### *Area II — Psychological Foundations*

##### 50.803 Child Psychology

##### 50.804 Adolescent Psychology

These two courses are intended for students with no previous background in psychology.

##### 50.806 Psychology of Learning

##### 50.810 Psychology of Personality

##### 50.811 Psychology of Cognition

It is strongly recommended that entrance into any of these courses be preceded by a course in psychology.

##### 50.808 Seminar in Child Development

Entrance into this course *must* be preceded by a course in child psychology or human development.

##### 50.809 Seminar in Adolescent Development

Entrance into this course *must* be preceded by a course in adolescent psychology or human development.

##### 50.850 Communications Theory

*Area III — Social Foundations*

50.801 Educational Anthropology

50.802 Sociology of Education

These two courses are intended for students with no previous background in sociology and anthropology.

50.805 Personality and Social Structure

It is strongly recommended that entrance into this course be preceded by a course in sociology, cultural anthropology, or social psychology.

50.820 Seminar in Contemporary Issues in American Education

*Area IV — Humanistic Foundations*

50.812 History of Education

50.813 Philosophy of Education

50.818 Comparative Education

## PROGRAMS

### Counselor Education

#### *General Information*

The Department of Counselor Education offers several concentrations within two major program clusters: School and College Counseling and Community and Rehabilitation Counseling. Each of the concentrations in these clusters is described on the following pages. Prospective students should apply to one of the two clusters.

The master's degree requirements can be completed by full-time students in four quarters or one calendar year. However, the Department considers these programs to be minimal and urges most students to take an additional year of study leading to the CAGS.

Part-time students entering any of the programs should be aware that the practicum sequence (53.805-53.806), including the concurrently required counseling course (53.804), is only offered on a sequential basis beginning in the Fall Quarter. Part-time students may not begin this sequence until their second year of study. Applications must be made and approved in advance for the practicum.

Full-time students in Counselor Education Programs will be accepted once a year beginning April 1, with a deadline of July 1, for completion of admission requirements. Part-time students will be admitted between April 1 and November 1, with the deadline for completing admissions requirements September 15. All students should apply for programs to begin in the Summer or Fall Quarters only. Early application is encour-

aged since there is limited enrollment and all spaces may be taken before the above deadlines for filing application materials.

### *Internships — Financial Aid*

No financial aid in the form of scholarships or grants is available to students through the Department. Students should consult the Financial Aid Office of the University for information as to what is available to graduate students. However, the Department does try to develop paid Internships in various work settings as both a means to ease the financial burden and to provide a more extensive work experience. The numbers of internships are limited, and they are not necessarily available in all programs. Their availability is entirely dependent on the interest and ability of schools or agencies to make money available for an internship position.

The opportunity for professional development makes the Internship especially attractive, and any interested student is encouraged to apply. No placements can be guaranteed, however. Applications for internships and additional information are available from the Department of Counselor Education or from the Graduate School Admissions Office.

### *Core Curriculum Requirements*

In addition to three Foundations of Education core requirements described on pages 52 and 53, all program choices in the Department have a common core of required courses as follows:

- 53.800 Foundations of Guidance and Human Services
- 53.801 Tests and Test Procedures
- 53.804 Counseling Theory and Process
- 53.805-53.806 Counseling Practicum

One of the following:

- 53.813 School Counseling Strategies
- 53.814 Vocational Counseling Strategies
- 53.815 Rehabilitation Counseling Strategies
- 53.816 Psychological Counseling Strategies

The Counseling Practicum is always specific to the particular concentration to which the student has been admitted. These core requirements constitute nine of the twelve courses required for the master's degree. The remaining three courses will be selected in consultation with the adviser. These course selections must be approved by the adviser prior to registration.

### **School and College Counseling Programs**

Program concentrations in this cluster include preparation for positions

in elementary school counseling, secondary school counseling, career education, college counseling, student personnel, and cooperative education.

The Elementary School Counseling Program prepares students to: 1) help children to grow in self-understanding and in positive fuller use of potential; 2) help parents to understand the developmental needs of all pupils and work with parents to meet the individual needs of their own children in the school situation; 3) participate in creating a school environment conducive to learning and growth for all children; and 4) participate in curriculum development and change. The training focuses on developing competencies in individual counseling, group counseling, consulting, testing, and parent counseling. Students are prepared to work with children, parents, and teachers in schools and related settings.

Elementary Counseling Practicum placements are made in a variety of urban and suburban elementary schools and in child guidance clinics.

The Secondary School Counseling Program assumes that there are things which the school counselor can do to make the school a better place in which to learn and to teach. Various ways in which the guidance person can work with pupils, parents, teachers, administrators, and community agencies as a counselor, as a consultant, and as a coordinator are emphasized. The focus of the program is on the practical background knowledge and the specific skills the counselor needs for helping students to learn more effectively, to make decisions more maturely, and to achieve personal fulfillment more completely.

Secondary Counseling practicum placements are made in a variety of urban and suburban secondary schools and school outreach programs.

The Career Education Program is designed to prepare students for a variety of counselor-type roles within the career education orientation. These newly emerging roles within the broad field of career education encompass three specific dimensions of training: 1) the organization and utilization of career information as a resource; 2) the development of job placement — job counseling skills; and 3) the innovation of appropriate curriculum practices and revisions. The program is designed so that at the practicum phase of their training students can be placed in field settings where they can obtain actual experience in all three of these dimensions of career education. This program is intended for students who have experience and/or an interest in working with school-age youth — grades kindergarten to twelve — in the area of career development and work placement.

Career Education Specialist Practicum placements are made in both comprehensive and vocational-technical schools where there is an emphasis on career education and/or work-study type programs. Insofar

as possible, placements will provide an opportunity for working on a K-12 basis.

Preparation for both college counseling and student personnel positions is similar and based on the assumption that the student personnel worker must have the human relations skills of the counselor, and the counselor must have an understanding of both the learning development needs of students and the instructional environment of the college setting. Graduates will have a basic knowledge of vocational development and career planning, information-gathering, interviewing techniques, decision-making strategies, and group process. Students may then choose to emphasize the counseling role in the counseling center or the student personnel role, which is more programmatic, within the institution. Practicum placements can be varied to suit individual interests. Positions for graduates may include counseling in junior colleges or residence halls; counseling in financial aid, student activities, or admissions offices; or that of assistant to a dean of students.

College Counseling and Student Personnel Practicum placements are made in a variety of junior college, college, and university settings in the Greater Boston area. In addition to counseling center placements, there are placements in residence halls, financial aids offices, and other student personnel program offices. Placements are also made in such higher education related settings as the Center for Alternative Education, a personal development program.

The rapid expansion of cooperative education programs in higher education throughout the United States has increased the need for trained persons to staff the centers that coordinate and operate these programs. Northeastern University is the largest cooperative education institution in the world, and as such, can provide an excellent opportunity for the student interested in this aspect of higher education. At the master's level the preparation emphasizes a counseling base because the coordinator's prime role involves student contact. The three major elements in the coordinator's role are 1) vocational decision-making counseling; 2) work placement and work evaluation; and 3) curriculum development within the institution. The coordination function involves providing links between the student and his educational program, and the employer and his work setting. These two elements are combined to produce a total educational experience for the student. Preparation beyond the master's degree can lead to careers in student personnel, counseling, higher education administration, or cooperative education administration.

Cooperative Education Coordinator placements will be made in the Division of Cooperative Education, Northeastern University, and in other colleges and junior colleges in the area that have or are developing cooperative education programs.

Courses within the Department, which may be selected as electives by students in this cluster, include:

- 53.802 Vocational Development and Occupational Information
- 53.807 Administration of Guidance Services
- 53.808 Group Counseling
- 53.809 The College Student and His Campus
- 53.810 Elementary School Guidance
- 53.811 Family and Parent Counseling
- 53.812 Seminar in Student Personnel Work
- 53.824 Individual Intelligence Testing

Relevant courses from other departments may also be selected as electives in the student's program.

### **Community and Rehabilitation Counseling**

Program concentrations in this cluster enable the student to prepare for positions in rehabilitation counseling and a variety of community-based counseling agencies, including mental health centers and employment security offices.

The Rehabilitation Counseling concentration is designed to prepare students to deliver comprehensive services to disabled and handicapped populations with the ultimate objective of improving the nature of their social, family, and personal functioning. The population to be served includes the physically handicapped, mentally ill, mentally retarded, alcohol and drug addicted, chronically dependent, and penal offenders. Graduates of this program will be generally familiar with the nature of physical, mental, and social handicaps; with the existing rehabilitative services through work experiences, field visits, reading, and discussions with agency personnel; with the elements of rehabilitation operations, including systematic evaluation, individual counseling, planning for additional needed examinations and services, planning for training, vocational planning and placement, and follow-up services in the community.

Rehabilitation Counseling practicum placements are made in community workshops for the physically handicapped, mentally ill, mentally retarded; workshops and half-way houses for drug addicts, alcoholics, and penal offenders; rehabilitation centers in mental hospitals, schools for mentally retarded, and correctional institutions; rehabilitation programs for dependent persons in the Welfare Department and in the Division of Employment Security; and rehabilitation programs and departments in community mental health centers.

The Community Mental Health Counseling concentration is designed to prepare students to assist in the delivery of comprehensive mental

health and allied counseling services to individuals, families, and groups experiencing personal, career, and social problems. Graduates will be introduced to the major approaches to individual, group, marriage, and family counseling. They will have some knowledge of important environmental effects on the behavior of various client populations. Because of the comprehensive nature of the community mental health field, students seeking admission to this program should give serious consideration to a two-year commitment or its equivalent leading to the completion of a Certificate of Advanced Graduate Study.

Community Mental Health Counseling practicum placements are made in out-patient clinics, in-patient facilities, community mental health centers, city hospitals having family counseling services, state mental hospitals, drop-in centers, career planning agencies, adolescent counseling programs, street-work and out-reach counseling programs.

The Community Services concentration is designed to prepare students to work in a variety of human services agencies providing adjustment, informational, supportive, and recreational services for broad segments of the population regarded as behaving normally. Much of the work could be categorized as preventive community mental health. Graduates will have a basic knowledge of vocational development and career planning, information-gathering, interviewing techniques, and decision-making strategies. They will have a knowledge of psychometrics, adolescent and adult personality development, procedures in educational and vocational placement, and the utilization of multiple helping agencies in meeting clients' needs. They will have skills in individual and small group counseling.

Community Services Counseling Practicum placements include state offices of the Division of Employment Security, Manpower Training Programs, Model Cities Programs, YMCA, YWCA, Boys' Clubs, Girls' Clubs, recreational facilities, community centers, drop-in centers, Youth Activities Commission, and career planning agencies.

Courses within the Department which may be selected as electives by students in this cluster, include:

- 53.802 Vocational Development and Occupational Information
- 53.808 Group Counseling
- 53.811 Family and Parent Counseling
- 53.824 Individual Intelligence Testing
- 53.831 Advanced Group Counseling

In addition to courses from the Department of Counselor Education, the following courses from the Department of Rehabilitation Administration



and Special Education are included as electives for this cluster:

- 56.950 Introduction to Rehabilitation
- 56.951 Principles of Medical Rehabilitation
- 56.965 Occupational Placement
- 56.980 Psychological Problems of Disability
- 56.835 Socio- and Psychodynamics of Family Life

### **Curriculum and Instruction (Including Programs in Reading)**

The programs in Curriculum and Instruction are appropriate for certified or experienced teachers who wish to prepare for instructional leadership and curriculum development responsibilities, who wish to expand their professional backgrounds in subject matter or pedagogy, or who wish to achieve reading certification.

This program will enable its graduates:

- (1) to view the educational process as an ongoing activity embodying both continuity in each of its parts and inter-relatedness among its parts;
- (2) to plan and institute learning activities which promote continuity and inter-relatedness;
- (3) to evaluate and modify appropriately existing programs and practices in their special fields;
- (4) to identify educational needs, analyze them, and develop suitable plans to meet them;
- (5) to institute desired changes in educational practice.

The following roles are some of those for which graduates of the program will be prepared:

- (1) specialist in a particular content area, such as reading, mathematics, science, social studies, English-language arts, at one or more levels — elementary, secondary, or adult education;
- (2) curriculum specialist in a variety of educational settings;
- (3) instructional specialist such as team leader, conductor of workshops, master teacher, and so forth, in a school or other educational setting.

The Master of Education in Curriculum and Instruction is divided into four basic areas of study:

1. Master of Education Core

## 2. Curriculum and Instruction Core

The Curriculum and Instruction Core consists of two sequential courses which individually and together emphasize a unitary view of the processes of curriculum development and instructional practices at all levels of education and in all school subjects. The Curriculum and Instruction Core is taught jointly by members of the Department, and students have the unique opportunity of studying with a wide range of faculty, each contributing his individual expertise and perspective within the context of the common purpose.

## 3. Specialization

A specialization consists of a number of courses constructed around a broad area through which students can pursue their specific interests while at the same time keeping sight of larger contexts. The courses are taught jointly by members of the Department of Curriculum and Instruction, grouped according to the commonalities among their subjects, thus giving students the opportunity to work within a context which, while recognizing the discreteness of a subject, at the same time encourages recognition of what this subject shares with its fellows in its area.

Students will normally select one area of specialization from those listed below, depending upon their background and interests. Students whose interests lie outside the above areas will be permitted to design, with their advisers, a program to meet their needs. Students seeking reading certification will fulfill the state requirements by completing the courses in the Reading specialization.

## 4. Electives

The elective portion of the Curriculum and Instruction Program will enable students to pursue other areas of interest which will complement or extend their area of specialization. Electives can be selected broadly from the offerings of the Graduate Schools of the University.

### *Specimen Programs*

#### Master of Education Core

Three courses as defined on pages 52 and 53.

#### Curriculum and Instruction Core

- 51.880 Evolution and Revolution in the School Curriculum
- 51.881 The Dynamics of Innovation in Curriculum and Instruction  
(51.881 is not a required course for students specializing in Reading.)

## Specializations

### Science-Mathematics

- 51.837 Curriculum Problems in Science and Mathematics
- 51.838 Seminar in Science and Mathematics Teaching
- 51.839 Implementing Change in Science and Mathematics Education
- Electives (four to be approved by adviser)

or

### Social Studies

- 51.851 Seminar in Current Issues in the Social Studies
- 51.853 History and the Social Sciences in the School Curriculum
- 51.854 Social Science Materials Seminar
- Electives (four to be approved by adviser)

or

### English-Language Arts

- 51.870 Developmental Reading and Writing
- 51.871 Reading and Language Disabilities I
- 51.872 Literature and Materials Seminar
- Electives (four to be approved by adviser)

or

### Reading

- 51.870 Developmental Reading and Writing
- 51.871 Reading and Language Disabilities I
- 51.872 Literature and Materials Seminar
- 51.873 Reading Clinic I
- 51.874 Reading and Language Disabilities II
- 51.875 Reading Clinic II
- Elective (one to be approved by adviser)

or

### General Academic

- 51.870 Developmental Reading and Writing
- 51.871 Reading and Language Disabilities I
- 51.837 Curriculum Problems in Science and Mathematics Education
- 51.838 Seminar in Science and Mathematics Teaching
- 51.853 History and the Social Sciences in the School Curriculum
- 51.854 Social Science Materials Seminar
- Elective (one to be approved by adviser)

or

### Combined Reading Certification

A special program offering the Liberal Arts or non-Education

graduate the opportunity to earn the Master of Education degree plus teacher certification (elementary or secondary) and certification as a reading specialist (K-12). This program is for full-time students only and will take a minimum of five full-time quarters to complete. Students will be accepted to begin in the Summer or Fall quarters. (See page 76 for description of the teacher certification part of this program.)

or

#### **Other Purposes**

A student who wishes to specialize in curriculum and instruction in a field not included in those listed above should make an appointment with an adviser for this program who will help him develop an appropriate course of study by drawing on courses offered throughout the Graduate Schools of the University.

Each candidate's program must be approved by his faculty adviser before he begins his course of study. A student admitted to special student status who feels he may eventually wish to be admitted to degree candidacy must consult with an appropriate faculty adviser before he enrolls in any course.

### **Educational Administration**

In the field of educational administration, three distinct programs are provided at the master's degree level. These programs are in the areas of elementary and secondary school administration, instructional technology, and occupational education.

#### *Elementary and Secondary Administration*

This program is designed to prepare the student for initial entry into the field of educational administration, preparing him for such beginning positions as assistant principal, principal of a small school, department chairman, special program director, or beginning administrator in allied fields, as well as to serve as a foundation for further graduate study. A typical program is as follows:

Master of Education Core (required of all candidates)

Three courses as defined on pages 52 and 53.

Educational Administration Requirements

52.810 Leadership in Education: Part I

52.811 Leadership in Education: Part II

Departmental Program of Study

52.813 Instructional Leadership: Curriculum Development and Supervision

- 52.805 Simulated Problems: Secondary School Administration and/or
- 52.814 Simulated Problems: Elementary School Administration
- 52.806 Directed Field Experiences in the Administration of the Elementary School
- 52.807 Directed Field Experiences in the Administration of the Secondary School
- 52.808 Seminar in Educational Administration
- 52.826 Administration of the Elementary School and/or
- 52.827 Administration of the Secondary School
- Electives (to be approved by adviser)

Upon completion of the above program, a comprehensive examination is given to each student.

### *Instructional Technology*

In recent years considerable growth and expansion has taken place in the area of technology for instructional purposes. With this thought in mind, the master's degree in this field has been created. It is aimed at formally preparing students to serve effectively as directors of such programs in schools, colleges, government, and industrial settings. Students completing this program are certifiable as audiovisual media specialists in the public schools.

A typical program:

Master of Education Core (required of all candidates)

Three courses as defined on pages 52 and 53.

Educational Administration Required Courses (3)

- 52.810 Leadership in Education: Part I
- 52.811 Leadership in Education: Part II
- 52.813 Instructional Leadership: Curriculum Development and Supervision

Instructional Technology Required Courses (5)

- 52.822 Foundations of Instructional Communications and Technology
- 52.823 Principles of Instructional Systems Development
- 52.817 Design, Production, and Utilization of Instructional Materials
- 52.818 Developing Curriculum Learning Packages
- 52.821 Administration of Instructional Media Programs

Those seeking certification as Audiovisual Media Specialists must also enroll in 52.847 Cataloguing and Classification of Instructional Materials.

Upon completion of the above program, a comprehensive examination is given to each student.

### *Occupational Education*

This program of study is designed to equip prospective administrators and supervisors of occupational education with understandings, skills, and technical competencies which will enable them to assume and perform leadership functions in such positions as coordinators, supervisors, or directors of occupational education in regular or comprehensive secondary schools, specialized vocational schools, community colleges, or at the state level. Satisfactory completion of an oral conference and a written comprehensive examination is also a requirement of this program.

Master of Education Core (required of all candidates)

Three courses as outlined on pages 52 and 53.

Educational Administration Requirements (4)

52.810 Leadership in Education Part I

52.811 Leadership in Education Part II

52.813 Instructional Leadership: Curriculum Development and Supervision

52.826 Administration of the Elementary School  
or

52.827 Administration of the Secondary School

Departmental Program of Studies in Occupational Education (5)

52.806 Directed Field Experiences in the Administration of the Elementary School

52.807 Directed Field Experiences in the Administration of the Secondary School

52.815 Simulated Problems: Administration of Occupational Education

52.816 Seminar in Career Education

52.843 Internship—other appropriate occupational electives from the Graduate School of Education.

### **Educational Research**

This program is designed to train educational researchers who will have: 1) an understanding of the nature and characteristics of research as it is carried on in educational research agencies; 2) a basic knowledge of research methodology and related theory that will enable them to assist at all stages of educational research; and 3) the technical skill to carry out independently the operational aspect of educational research.

The objectives stated above and the related competences are achieved

through an integrated program of study. This program may be taken on a full- or part-time basis, and study may begin in any quarter. A full-time student will normally complete degree requirements in one academic or calendar year (three or four quarters). The culminating component of the program is the planning, executing, and writing up of research for a thesis, intended as a small-scale but original investigation into a significant educational problem. The thesis may be presented in one of several formats selected jointly by the student and the adviser.

All candidates will be required to complete the following program:

Master of Education Core (required of all candidates)

50.815 Research Design in Education (Area I)

Two courses from the remaining areas as described on pages 52 and 53.

Educational Research Requirements

50.841 Introduction to Educational Statistics

50.842 Intermediate Educational Statistics

50.817 Advanced Research Design in Education

50.847 Introduction to Computer Programming: FORTRAN IV

50.891 Thesis (equivalent to two courses)

or

50.845-846 Independent Research Seminars I & II

Electives (three)

## Human Development

The overall objective of this program is to provide opportunities for practicing and prospective educators to expand and deepen their knowledge and understanding of human development in its psychological and social aspects. Completion of the program does not lead to state certification, and a teaching certificate is not required for admission to the program. However, the program can provide a useful background for persons teaching, or planning to teach, psychology and behavioral science in secondary and elementary schools. It can also serve as introductory preparation for students who aspire to later doctoral study in the field of human development. Full-time students will take a maximum of four courses per term and will complete the program in a minimum of three quarters. Part-time students will take a maximum of two courses per term and will complete the program in a minimum of six quarters.

Candidates may begin study in any quarter and will be required to complete the following program:

Master of Education Core (required of all candidates)

50.815 Research Design in Education

Two additional courses, one from Area III (Social Foundations) and one from Area IV (Humanistic Foundations).

#### Human Development Requirements

50.806 Psychology of Learning

or

50.811 Psychology of Cognition

50.810 Psychology of Personality

or

50.805 Personality and Social Structure (if not taken in EdM Core, above)

50.808 Seminar in Child Development

50.809 Seminar in Adolescent Development

50.819 Theories of Developmental Psychology

#### Electives (choice of courses or thesis):

Courses: four courses, chosen in consultation with an adviser, from those offered in the Graduate School of Education and other departments in the University

Thesis: 50.817 Advanced Research Design in Education  
50.842 Intermediate Educational Statistics  
50.891 Thesis (equivalent to two courses)

### Rehabilitation Administration and Special Education

#### *Rehabilitation Administration*

This program is designed to prepare students for positions of administrative leadership and research in a wide range of rehabilitation and health care service agencies.

Students majoring in Rehabilitation Administration should anticipate taking 15 credit courses for the degree under either of the following options:

Plan A: For students with limited rehabilitation or administration experience.

The program will be conducted on a cooperative education basis. This means that the student will alternate periods of academic course work with paid practical experience in the field over a 21-month period.

Plan B: For students with considerable rehabilitation or administration experience.

The program takes one calendar year from September through August and includes four academic quarters. During this time the student also completes 500 hours of practical experience in the field. Under Plan B



there are a limited number of federal stipends available which are issued on a competitive basis.

**Plan C:** For students with limited rehabilitation or administration experience who wish an alternative plan to cooperative education.

The program will take a minimum of two calendar years. During that time the student will elect his academic course work, 500 hours of practical field work experience, and a full-time internship experience.

#### Recommended Core Courses

- 50.805 Personality and Social Structure
- 50.807 Abnormal Psychology

#### Department Requirements

- 56.950 Introduction to Rehabilitation
- 56.951 Principles of Medical Rehabilitation
- 56.952 Rehabilitation and Social Services
- 56.953 Organization and Administrative Theory
- 56.961 Rehabilitation Administration I
- 56.963 Rehabilitation Administration II
- 56.832 Group Dynamics
- 56.960 Practicum in Rehabilitation Administration
- 56.956 Community Planning in Rehabilitation

#### Electives chosen from

- 56.957 Federal-State Relations in Rehabilitation
- 56.958 Social Welfare and Rehabilitation
- 56.959 Rehabilitation Research
- 56.962 Administration of a Sheltered Workshop
- 56.964 Rehabilitation and the Law
- 56.965 Occupational Placement
- 52.865 Systems Theory in Education
- 53.815 Rehabilitation Counseling Strategies

#### *Interrelated Programs in Special Education*

Interrelated programs in Special Education offer options to prepare for work with individuals having mild to moderate special needs (emotional disturbance, learning disabilities, mental retardation) or those having severe handicaps in one or more of the above areas. In addition, a concentration in preschool handicapped is available. For those planning to work outside the classroom with schools and/or public or private agencies, there is the program of Special Education Community Personnel (SECP).

In all but the SECP program, eligibility for certification at the elementary or secondary level is the prerequisite for a student to begin concentrating on the special education sequence. Students lacking the above may

earn certification through satisfactory completion of prescribed courses in elementary or secondary education at Northeastern. Applicants certified at the secondary level may need additional preparation in areas of reading, mathematics, and methods and materials, at the elementary level, to obtain additional background for work with individuals with special needs.

Degree candidates must demonstrate competency in child psychology, abnormal psychology, and introductory statistics through previous course work or they will be required to complete such course work before graduating. The statistics course may be fulfilled by satisfactory completion of the programmed learning course in statistics given at the University.

An option leading to certification in a single area, providing the student enters the program with elementary or secondary teaching certification, or completion of the SECP program, will normally require four to five quarters of full-time graduate study, preferably beginning in the Summer Quarter. A student who needs to obtain the above certification should expect to spend additional time completing the program.

Field Work and Student Teaching or Practicum placements are an integral part of the Master's Degree program. All students are required to do two quarters of Field Work and one quarter of Student Teaching or Practicum. Educational settings utilized for field work include public and private schools, day and residential programs, and hospital-based educational facilities.

A sequenced program will be developed in consultation with the major adviser based upon the student's background, experience, and interests. It will include basic requirements of the graduate school, the Division, and the State Department of Teacher Certification, where appropriate. Massachusetts' State Department of Education is currently granting Letters of Approval until final certification requirements are established. Electives will be drawn from other programs as warranted.

Completion of all programs in special education is contingent upon the candidate's demonstration of competency in specified fields of knowledge and skills as measured by academic success and satisfactory completion of Field Work and Student Teaching or Practicum. A comprehensive examination will be taken during the quarter in which the student completes nine courses related to the Special Education degree, other than elementary or secondary teaching certification courses.

### *Financial Aid — Traineeships*

A limited number of traineeships through Federal grants is anticipated for 1975-1976. The student in need of financial help should discuss the

matter during the interview with the Division faculty member. The Department has also attempted to develop paid internships in a variety of settings in order to offer students other opportunities for professional development as well as a means of financial assistance. Students selected for an internship will need to plan for a program extending over approximately two years. (Refer also to Financial Aid, page 34.)

### Core Curriculum Requirements

In addition to the Foundations of Education core requirements described on pages 52 and 53 and the prerequisites described above, the programs in the Division of Special Education have the following common core of required courses:

- 55.806 Language Disturbances in Children
- 56.807 Learning Disabilities
- 56.840 Psychology of Mental Retardation and other Handicapping Conditions
- 56.846–56.847 Special Education Methods and Materials Related to Measurement and Evaluation
- 56.880–56.881 Etiology and Development of Deviations in Special Needs Individuals
- Field Work and Seminar
- Student Teaching and Seminar or Practicum and Seminar

Any core curriculum requirement may be waived if, in the opinion of the adviser, the student has had an equivalent course.

Field Work and Student Teaching or Practicum are specific to the student's major interest. With the written approval of the student's adviser, a student who is approved, certified, or able to be approved in an area of Special Needs, will be required to do Field Work but may not be required to do Student Teaching. The program for each student is designed in relation to his educational and experiential background, his professional goals, and the limitations (such as approval and certification) implied by such goals.

### Teacher Preparation Options

#### *Generic Special Educator*

This program option develops competencies (as delineated in Mass. Regulations for Interim Approval) as resource room and consulting teachers dealing with mildly involved special needs children.

#### Recommended Core Courses

- 50.815 Research Design in Education

- 50.808 Seminar in Child Development
- 50.805 Personality and Social Structure

Department Core Curriculum Requirements  
see page 69.

Required Courses for Generic Special Educator

- 56.801 Alternatives for Providing Services for Special Needs Children
- 56.831 Teaching the Emotionally Disturbed

Further electives may be chosen in consultation with the student's academic adviser.

Field Work and Student Teaching assignments will concentrate on mild disabilities in resource room and diagnostic-prescriptive settings.

### *Emotional Disturbance — Learning Disabilities*

This area of specialization prepares students to work with mildly to moderately handicapped pupils in a self-contained class or to work as a resource teacher where classes have been integrated.

Recommended Core Courses

- 50.815 Research Design in Education
- 50.808 Seminar in Child Development
- or
- 50.807 Abnormal Psychology
- 50.805 Personality and Social Structure

Department Core Curriculum Requirements  
see page 69.

Required Courses for Emotional Disturbance-Learning Disabilities

- 56.831 Teaching the Emotionally Disturbed

Further electives may be chosen in consultation with the student's academic adviser.

Field Work and Student Teaching assignments will concentrate on various educational and residential settings.

### *Mental Retardation — Learning Disabilities*

This area of specialization prepares students to work with mildly to moderately handicapped pupils in a self-contained class or as a resource teacher in a school where classes have been integrated.

Recommended Core Courses

- 50.815 Research Design in Education
- 50.808 Seminar in Child Development

50.805 Personality and Social Structure

Department Core Curriculum Requirements

see page 69.

Required Courses for Mental Retardation-Learning Disabilities

56.841 Development and Implementation of Programs for the Moderately Handicapped

Further electives may be chosen in consultation with the student's academic adviser.

Field Work and Student Teaching assignments will concentrate on mild to moderate disabilities in resource room and self-contained classrooms.

*Multiply Handicapped*

Students will be prepared to function as classroom teachers in a variety of settings. Classes may be situated in private or public schools or institutions. It is recognized that the functions of the student will vary greatly depending upon the classroom setting and the requirements of children in any given classroom situation. With this in mind, students will be prepared in certain core areas and then given more specialized training in working with the multiply-handicapped. The courses and practicum experience required are designed to meet with standards developed by the Department of Education of the Commonwealth of Massachusetts and similar requirements throughout the country.

Required Core Courses

- 50.815 Research Design in Education
- 50.808 Seminar in Child Development
- 50.805 Personality and Social Structure

Department Core Curriculum Requirements

see page 69.

Multiply-Handicapped Program

- 56.835 Socio- and Psychodynamics of Family Life
- 56.838 Development and Implementation of Programs for the Severely Handicapped
- 56.839 Multiply-Handicapped

Electives are chosen from

- 56.847 Seminar in Mental Retardation
- 56.848 Preschool Learning Problems — Identification and Program Development
- 55.803 Cerebral Palsy
- 55.804 Aphasia
- 55.816 Test Procedures in Speech and Language Pathology
- 55.861 Neuropathology

*Preschool Handicapped Children*

Teachers who complete this program may function in a variety of roles: (1) teacher in a self-contained handicapped preschool classroom; (2) teacher of an integrated preschool program; and (3) consultant to other teachers of preschool children.

**Prerequisite**

Certification or eligibility for certification in Massachusetts to teach at the elementary level. (This may be waived if newly developed certification procedures do not require such certification.)

Prior training, preferably with experience in "regular" preschool education. Students without this preparation may be admitted but will be required to take additional appropriate courses.

**Required Core Courses**

- 50.815 Research Design in Education
- 50.808 Seminar in Child Development
- 50.805 Personality and Social Structure

Departmental Core Curriculum Requirements  
see page 69.

**Courses for Preschool Handicapped Teacher Program**

- 56.835 Socio- and Psychodynamics of Family Life
- 56.848 Preschool Learning Problems — Identification and Program Development
- 53.804 Counseling Theory and Practice

*Special Education Community Personnel*  
(A Noncertification Program)

Northeastern University, Department of Rehabilitation and Special Education, in response to identified needs and national trends, offers a program for individuals with broad interests and abilities to prepare them to function as advocates for handicapped children and youth and to act as liaison between community agencies and the school.

Implied in such a program is the possession or acquisition of knowledge of social problems, teaching, community and school organization, child development, problems of multiple handicaps, and facilities for care, treatment, and remediation. Implied also are skills in working with the handicapped, with peers in numerous professions, and with techniques of survey research. Integrated course and field work experiences will be designed to complement each applicant's background of education and experience. Approximately four to five quarters are estimated for demonstration of competence in the specified areas.

### Recommended Core Courses

- 50.810 Psychology of Personality
- 50.820 Seminar in Contemporary Issues in American Education

### Department Requirements

- 56.880-881 Etiology and Development of Deviations in Special Needs Individuals
- 56.840 Psychology of Mental Retardation and other Handicapping Conditions
- 56.807 Learning Disabilities
- 56.853 Field work and Seminar
- 56.854 Practicum

### Electives chosen from

- 56.952 Rehabilitation and Social Service
- 56.956 Community Planning in Rehabilitation
- 56.835 Socio- and Psychodynamics of Family Life
- 56.839 Multiply Handicapped
- 56.845 Rehabilitation and the Special Education Teacher
- 51.920 Methods and Materials in Adult Literacy Education

Other courses in consultation with adviser.

## Speech Pathology and Audiology

The program leading to the degree of Master of Education in either Speech Pathology or Audiology is designed to qualify candidates for membership in and certification by the American Speech and Hearing Association. Graduates of the program are also qualified for further graduate study and for employment as speech pathologists or audiologists in clinics, hospitals, public schools, and rehabilitation centers.

This program assumes that students have completed an undergraduate preprofessional program in speech and hearing. Those without such preparation will be required to complete additional courses beyond the 48 quarter hours normally required for the master's degree. Such students can expect to devote five or six academic quarters to this program in order to complete the practicum hours. Applicants should specify a major in either Speech Pathology or Audiology.

This program is conducted with the cooperation of a large number of community agencies.

### *Speech Pathology*

Each student's program is individually designed with the assistance of a faculty adviser to assure that course work is distributed in all major

professional areas including: diagnostics, articulation, language, fluency, voice, and audiology. The student is also advised about how his program prepares him to meet certification requirements established by the American Speech and Hearing Association.

Master of Education Core (required of all candidates)

Three courses as defined on pages 52 and 53.

55.813 Advanced Clinical Practice

### Speech Pathology Courses

A minimum of nine courses selected from the following or appropriate electives:

55.803 Cerebral Palsy

\*55.804 Aphasia

55.805 Disorders of Voice

\*55.806 Language Disturbances in Children

55.811 Clinical Management in Stuttering

\*55.812 Differential Diagnosis in Speech and Language Pathology

\*55.816 Test Procedures in Speech and Language Pathology

55.817 Advanced Anatomy, Neurology and Physiology of Speech-Hearing Mechanism

55.822 Seminar in Oro-facial Anomalies

55.823 Psycho-social Aspects of Communication Disorders

55.861 Neuropathology

55.824 Seminar in Speech Pathology

55.860 Aphasia Rehabilitation

55.863 Advanced Study of Articulation Disorders

55.891 Thesis (optional)

55.899 Directed Study (optional)

Satisfactory completion of a comprehensive examination is a requirement of this program.

### *Audiology*

Each student's program is individually designed with the assistance of a faculty adviser to assure that course work is distributed among evaluation, diagnosis, and aural rehabilitation. The student is also advised about how this program prepares him to meet certification requirements established by the American Speech and Hearing Association.

Master of Education Core (required of all candidates)

Three courses defined on pages 52 and 53.

55.813 Advanced Clinical Practice

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\*Required or an equivalent graduate level course.



**Audiology Courses**

A minimum of nine courses selected from the following or appropriate electives:

- 55.814 Clinical Audiometry I
- 55.815 Clinical Audiology
- \*55.817 Advanced Anatomy, Neurology, and Physiology of Speech-Hearing Mechanism
- \*55.818 Pathologies of the Ear
- 55.819 Clinical Audiometry II
- 55.820 Physiological Acoustics
- 55.821 Seminar in Audiology
- 55.823 Psycho-social Aspects of Communication Disorders
- 55.862 Psycho-acoustics
- 55.825 Teaching Speech to Deaf Children
- 55.826 Teaching Language and Reading to Deaf Children
- 55.828 Aural Rehabilitation
- 55.891 Thesis (optional)
- 55.899 Directed Study (optional)

Satisfactory completion of a comprehensive examination is a requirement of this program.

*Teaching the Deaf*  
(Full program not offered 1975-76)

The following curriculum in the preparation of teachers of the deaf is offered in affiliation with the Beverly School for the Deaf. Candidates lacking prerequisite courses will be required to complete them prior to the following program.

**Master of Education Core (required of all candidates)**

Three courses as defined on pages 52 and 53.

**Teaching the Deaf Requirements**

- 55.814 Clinical Audiometry I
- 55.815 Clinical Audiology
- 55.816 Test Procedures in Speech and Language Pathology
- 55.825 Teaching Speech to the Deaf
- 55.826 Teaching Language and Reading to the Deaf
- 55.827 Methods and Materials in Deaf Education
- 55.828 Aural Rehabilitation
- 55.852 Practicum: Teaching the Deaf (8 quarter hours)

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\*Required or an equivalent graduate level course.

## NONDEGREE PROGRAM FOR CERTIFICATION OF ELEMENTARY AND SECONDARY TEACHERS

This program is designed to qualify college graduates for certification as elementary or secondary teachers in the Commonwealth. Students who are interested in qualifying to teach in other states should obtain a copy of that state's certification requirements and bring it to the initial interview with their advisers.

This program is open to individuals who meet the general admission requirements for the Master of Education degree. In addition, students whose backgrounds may not include an approved course in such areas as human development or learning must take such a course either before they enter the program or before student teaching. Furthermore, candidates for secondary certification must have completed, before admission, 36 quarter hours of courses in the field in which they are preparing to teach, with a QPA for all courses taken in that field of at least 2.000. No special students will be admitted to these courses; no transfer of courses or credit will be allowed.

This is a part-time, integrated, one-year program which begins in the Fall Quarter and continues through the following Winter and Spring Quarters. It requires that a student attend classes two nights a week during the Fall and Winter Quarters and spend full-time (days) as a student teacher in a school during the Spring Quarter.

The program consists of a sequence of inter-related activities led by a team of teaching specialists in elementary and secondary education and in the fields of mathematics, English, reading, science, and history and the social sciences.

### Course Sequence

(The courses must be taken in the order listed):

#### Fall Quarter

51.800 Principles of Teaching

51.863 Methods and Materials for Teaching Children I

or

51.865 Methods and Materials for Teaching Adolescents and Adults I

#### Winter Quarter

51.801 Curricula of American Schools

51.864 Methods and Materials for Teaching Children II

or

51.866 Methods and Materials for Teaching Adolescents and Adults II

**Spring Quarter****51.805 Student Teaching with Related Seminar**

Applications for Student Teaching must be received by the Director of Field Placement no later than October 15.

This program does not lead to any degree. However, applicants who are able to be full-time graduate students may apply for simultaneous admission to most programs requiring certification in the Graduate School of Education. Such students may take one or two courses in the degree program along with the certification courses (except during the Student Teaching quarter when no courses may be taken), but must complete certification requirements during the first year of study. Students who cannot devote full-time to graduate study may apply to master's degree programs after successful completion of the certification program.

**CERTIFICATE OF ADVANCED GRADUATE STUDY**

The Certificate or Advanced Graduate Study is available to applicants who have demonstrated a strong background in the special field of study at the master's level and who meet the specific requirements of the Graduate School of Education and the appropriate department. CAGS programs are offered in the areas of:

**Counselor Education**

- Pupil Personnel Services Administration
- Community Mental Health
- Rehabilitation Counseling
- School Psychology

**Educational Administration**

- Cooperative Education
- Educational Administration
- Higher Education
- Instructional Technology

**Rehabilitation and Special Education Administration**

All students must complete one of the programs as outlined in the following pages. In most cases, the sequence is designed to be very flexible. Any variations or changes must have the prior recommendation of the major adviser and approval of the Director of the Graduate School of Education.

**Counselor Education**

The CAGS represents a second year of preparation beyond the master's degree for the counseling and human services field. This is not a pre-doctoral program but a terminal professional degree program. There are

four major options in the Counselor Education Department: Pupil Personnel Services Administration and School Psychology (School and College Counseling Cluster) and Community Mental Health and Rehabilitation Counseling (Community and Rehabilitation Counseling Cluster). Students with master's degree work in rehabilitation counseling who wish to emphasize administrative preparation at the CAGS level should enter the Rehabilitation Administration program. Students with master's degrees in College Counseling and Student Personnel who wish to pursue careers in higher education with an administrative emphasis should enter the Higher Education Administration program.

Each of these counselor education program concentrations presumes master's level preparation in counseling the equivalent of that offered at the University. Students whose master's program in Counselor Education lacked a practicum will be required to take 53.805–53.806 in addition to the minimum course requirements for the CAGS. Students with master's degrees in fields other than counseling will, if otherwise admissible, be required to make up a minimum of five courses from the master's program. These students will need a minimum of two years to complete the requirements for the CAGS.

In addition to the course requirements, students must pass a comprehensive examination (written and/or oral) before the certificate will be awarded.

After filing all application materials required by the Graduate School, applicants will be contacted by the Department to arrange for admissions interviews. Since there are a limited number of spaces in the CAGS program, early application is urged.

### *Pupil Personnel Services Administration*

Students who have prepared themselves for school counseling positions and who are interested in leadership positions in guidance and pupil personnel services should choose this option. The program provides for further work in counseling, but emphasizes administrative and organizational preparation for the effective delivery of personnel services to students. Field placements will provide for the development of skills and knowledge in planning, supervision, and delivery of services within the context of the total educational program of the school system.

A typical program is as follows:

- 53.840–53.841 Advanced Field Work
- 53.834 Advanced Theories of Behavior Change
- 53.833 Seminar in Counseling Supervision and In-Service Education
- 53.836 Systems Approach to the Development of Human Services
- 52.810 Leadership I
- 52.811 Leadership II

- 52.831 Innovation and Change in American Public Schools
- 52.832 The Process of Administration
- Two Electives

### *Community Mental Health*

Students whose primary interest is the delivery of individual and group counseling services in a variety of settings, including, but not limited to, schools, college counseling centers, and mental health centers, should choose this option. This program provides for a more "therapeutic" orientation but is not as focused on a particular setting or category of settings. Field placements will provide for the development of the student's individual and group counseling skills and will be varied according to individual need and interest. Mental health settings will tend to predominate in the field assignments.

A typical program is as follows:

- 53.840–53.841 Advanced Field Work
- 53.834 Advanced Theories of Behavior Change
- 53.816 Psychological Counseling Strategies
- 53.818 Case Studies in Marriage and Family Counseling
- 53.831 Advanced Group Counseling
- 53.835 Psychodiagnostic Measures
- 50.819 Theories of Developmental Psychology
- 56.835 Socio- and Psychodynamics of Family Life
- 50.807 Abnormal Psychology
- Two Electives

### *Rehabilitation Counseling*

This is an advanced level program for students who desire to work with the various populations described under the master's degree program related to this area. The special emphasis of the program will be in the acquisition of 1) advanced counseling skills; 2) supervisory skills; 3) program development skills; and 4) administrative skills. The student trained at this level will retain his identity and function as a counselor, but he will also be prepared for supervisory and staff training functions. In addition, he will acquire skill in the planning and development of new and modified service programs, including the capability of preparing necessary designs for grant applications, program evaluation, and other related tasks. The administrative training will prepare the student for possible assumption of leadership positions in the delivery of human services.

A typical program is as follows:

- 53.840–53.841 Advanced Field Work
- 53.834 Advanced Theories of Behavior Change

- 53.831 Advanced Group Counseling
- 53.836 Systems Approach to the Development of Human Services
- 53.818 Case Studies in Marriage and Family Counseling
- 56.980 Psychological Problems of Disability
- 56.982 Essentials of Case Management and Supervision
- 56.983 Rehabilitation of Alcoholic and Drug Dependent
- 56.984 Rehabilitation of the Penal Offender
- Two Electives

### *School Psychology*

The course offerings and field experiences in this program are designed to prepare students as school psychologists. In accordance with Massachusetts certification requirements, the goal is to develop professional competencies necessary for providing direct, specific, and practical assistance to students, classroom teachers, parents, and other school personnel in promoting an optimal psycho-educational experience.

This specialization is sponsored jointly by the Graduate School of Education and the Department of Psychology in the College of Liberal Arts. Applicants for this program will be interviewed by both the Department of Counselor Education and the Department of Psychology. The admitted student will be assigned an adviser from one of these two departments who will plan the student's program.

Courses to meet the degree and certification requirements will be selected from the Graduate School of Education and the Department of Psychology to reflect the following areas of study: learning theory, counseling strategies and interviewing, psychodiagnosis, remediation, special education, curriculum, organizational development, school structure, psychopathology, human development.

Two years of field experience as a school psychology trainee under the supervision of a certified school psychologist are required.

### **Educational Administration**

Beyond the master's degree level, four advanced administrative training programs at the Certificate of Advanced Graduate Study (CAGS) level are offered. These programs are in the fields of cooperative education, educational administration, higher education, and instructional technology.

### *Cooperative Education*

A program of study at the master's level in the area of cooperative education is located in the Counselor Education Department. The program offered here is an advanced one aimed at the preparation of ad-

ministrators of cooperative education programs in a variety of settings: the public schools, vocational-technical schools, and junior colleges, as well as at other institutions of higher learning.

A typical program is as follows:

#### Required Core

- 52.830 Current Issues in Educational Administration
- 52.831 Innovation and Change in American Public Schools
- 52.832 The Process of Administration
- 51.900 Cooperative Education in America
- 52.824 The Administration of Cooperative Education

#### Electives

A minimum of seven to be selected in consultation with the student's adviser. These courses will be drawn from the appropriate areas of administration, counselor education, or other related offerings depending upon the student's career goals in settings such as: colleges, junior colleges, public schools, and other educational agencies.

Upon completion of this program, a comprehensive examination is given to each student.

### *Educational Administration*

The Certificate of Advanced Graduate Study (CAGS) program in Educational Administration is designed to provide the student with a closer examination of a particular administrative or supervisory position. Extending beyond the generic master's degree program, major emphasis is given to role specialization and the particular skills that should be acquired by prospective and practicing school administrators. Completion of this program should develop further the leadership capabilities essential to the student's area of specialization such as: the principalship of a large school; the assistant superintendency; the superintendency of a small district or supervisory union; directorship of federal system-wide or state education department programs.

*A minimum of 12 courses beyond the master's degree is required for completion of the program as well as satisfactory completion of a comprehensive examination.*

#### Core Courses (required)

- 52.830 Current Issues in Educational Administration
- 52.831 Innovation and Change in American Public Schools
- 52.832 The Process of Administration

#### Electives

- 52.834 Educational Finance
- 52.835 School Business Management
- 52.836 Personnel Administration

- 52.837 School-Community Relations
- 52.838 School Plant Planning, Operation, and Maintenance
- 52.840 Problems in School Administration: A Simulated Experience — The Superintendency
- 52.842 Problems in School Administration: A Simulated Experience — Assistant Superintendent for Instructional Services
- 52.899 Direct Study
- 52.843 Administrative Internship
- 52.844 School Law
- 52.865 Systems Theory in Education
- 52.866 Politics and Educational Decision Making

### *Higher Education*

This program of study is directed toward the training of college administrators. Emphasis is placed on the development of attitudes, understandings, and skills necessary to prepare the potential administrator and to give this development the necessary philosophic base on which the administrator can build an effective career.

A typical program is as follows:

#### Required Core

- 52.830 Current Issues in Educational Administration
- 52.831 Innovation and Change in American Public Schools
- 52.832 The Process of Administration

#### Electives

A minimum of nine to be selected in consultation with the student's adviser. These courses will be drawn from appropriate areas of administration, counselor education, and other related offerings depending upon the particular higher education specialization of the student.

Upon completion of this program, a comprehensive examination is given to each student.

### *Instructional Technology*

The Certificate of Advanced Graduate Study (CAGS) program in Instructional Technology is designed to provide the student with advanced administrative and instructional technology skills. Four areas of contact are integrated into this advanced program. A broad exposure is presented in the field of educational administration through the core courses. Instructional technology electives provide the student with advanced techniques of using modern technology for instructional purposes. By means of educational administration electives, reasonable depth is provided in such areas as finance, physical facilities, and com-



munity relations. And finally, by means of additional electives throughout the University, further contacts and expertise may be attained.

Upon completion of this advanced program, the student is prepared to assume top leadership in the field of instructional technology in central office positions of a public school system as well as directorship of such specialized programs in industry, government, institutions of higher learning, and privately operated instructional programs in urban settings.

A typical program is as follows:

**Educational Administration Core Courses (3)**

- 52.830 Current Issues in Educational Administration
- 52.831 Innovation and Change in American Public Schools
- 52.832 The Process of Administration

**Instructional Technology Electives (minimum of 4 as approved by the adviser)**

**Educational Administration Electives (minimum of 4 as approved by the adviser)**

**Electives (optional number)**

Upon completion of the above program, a comprehensive examination is given to each student.

## **Rehabilitation and Special Education**

### *Rehabilitation Administration*

The CAGS Program in Rehabilitation Administration is offered for students who already possess a master's degree in rehabilitation administration or its equivalent. It is intended to enable a student to develop advanced skills in the areas of program planning, decision making, communication and research design in administration. In addition, the educational experience will be substantively focused in areas of service to fields of corrections, alcohol and drug addiction, geriatrics, and social welfare.

A minimum of twelve (12) courses beyond the master's degree is required for completion of the program as well as satisfactory completion of a qualifying and a comprehensive examination.

#### **Departmental Core Courses (Required)**

- 56.959 Rehabilitation Research
- 56.980 Psychological Problems of Disability
- 56.981 Administrative Problems in Rehabilitation
- 56.986 Critical Issues in Rehabilitation Administration

**Electives**

- 56.982 Essentials of Case Management and Supervision
- 56.983 Rehabilitation of Alcoholic and Drug Dependent
- 56.984 Rehabilitation of the Penal Offender
- 56.985 Rehabilitation of the Geriatric Client
- 52.832 The Process of Administration
- 52.836 Personnel Administration
- 52.843 Administrative Internship
- 52.899 Directed Study
- 53.836 Systems Approach to the Development of Human Services
- 56.832 Group Dynamics

**Special Education Administration**

An interrelated program at the CAGS level is designed to prepare administrators of Special Education programs in public schools and in local and state institutions and agencies.

Students entering the CAGS program in Special Education Administration must have a master's degree, equivalent to that offered at the University, in one or more areas of special education and at least three years of classroom experience. Some students may have to take prerequisite courses to satisfy deficiencies.

**Core Requirements**

- 52.830 Current Issues in Educational Administration
- 52.831 Innovation and Change in American Public Schools
- 52.832 The Process of Administration
- 56.953 Organization and Administrative Theory

**Department Requirements**

- 56.952 Rehabilitation and Social Services
- 56.870 Seminar in Special Education Administration
- 56.839 Multiply Handicapped
- 52.843 Administrative Internship

Electives chosen are dependent upon student's past educational and experiential background.

In addition to course requirements and demonstration of competencies in both academic and practicum areas, students must pass a written and/or oral comprehensive examination before the certificate will be awarded.

**DOCTOR OF EDUCATION**

The Doctor of Education (Ed.D.) degree program in Leadership: Administration and Supervision is offered jointly by various departments within the College of Education and brings together a functional part

of each into a single entity. The area of study, administration and supervision, is appropriate to any candidate seeking a terminal degree in the related fields of school administration, rehabilitation administration, and higher education administration. Each degree candidate is involved in an academic experience that is an individually developed program of courses and activities. Such study will contribute to an integration of knowledge about the theoretical and pragmatic learnings pertaining to the chosen field of endeavor.

Specific concentrations may be found in elementary and secondary school administration, school central office administration, administration of special education, and pupil personnel administration. In addition to the wide range of school administrative and supervisory specializations, other program concentrations include rehabilitation administration, administration of community, junior and four-year colleges, administration of cooperative education, student personnel administration, and general educational administrative planning and development.

Although each student's program is individually developed, some general requirements apply to all. The program consists of approximately seventy-six quarter hours of study beyond the master's degree. In addition to course requirements, each student is expected to complete three quarters of full-time study in residence. Two of these quarters must be consecutive (one of which may be in the Summer Quarter), the third may occur at any time in the program or may be fulfilled through a full-time internship. In each student's program, the major field of study must be complemented by two minor areas of study from offerings in the College of Education and other colleges within the University. Each student is expected to complete a doctoral dissertation.

The Doctor of Education degree is awarded to candidates who present evidence of proficiency, high attainment, and research competence in their area of specialization, and who also demonstrate potential for professional educational leadership.

Following is the general type of program format that will be developed for each student.

### **PROGRAM OF STUDIES**

*Leading to the Doctor of Education Degree in Leadership:  
Administration and Supervision*

#### **Courses**

Required Core (required of all students)

- Doctoral Seminar in Leadership: Administration and Supervision I
- Doctoral Seminar in Leadership: Administration and Supervision II
- Doctoral Seminar in Leadership: Administration and Supervision III

Program Specialization (minimum of 32 quarter hours)

A planned sequence of courses in the student's specific area of concentration, i.e.,

School Administration

Rehabilitation Administration

Higher Education Administration

Cooperative Education Administration

Special Education Administration

Pupil Personnel Administration

Outside Minor Supporting Area (minimum of 12 quarter hours)

A planned sequence of graduate courses from departments within the University, but outside the College of Education.

Inside Minor Supporting Area (minimum of 12 quarter hours)

A planned sequence of graduate courses within the College of Education, but outside the student's main area of concentration.

Dissertation and Dissertation Seminar (required of all students)

In addition to these general program requirements, each student will be expected to complete a qualifying examination, provide evidence of intermediate statistical proficiency, pass final comprehensive and oral examinations. These requirements are described elsewhere in the catalog.

# description of courses

All courses carry four quarter hours of credit unless indicated otherwise. Please see the current schedule for Summer, Fall, Winter, and Spring Quarter listings.

## FOUNDATIONS OF EDUCATION

### **50.801 Educational Anthropology**

Examination of schooling as a particular variety of socialization, with special attention to characteristics of societies that rely heavily on formal instruction, contrasted with less deliberately patterned techniques of child-rearing. Readings will be mainly cross-cultural, ethnographic, and historical. The emphasis of the course varies from quarter to quarter, and will be announced in the registration materials distributed in advance of each quarter. (core course)

### **50.802 Sociology of Education**

The functioning of educational institutions in their social and cultural milieu will be examined from anthropological and sociological perspectives. The school as a social system; influence of the stratification system, youth cultures, and racial antagonisms upon the educational enterprise. (core course)

### **50.803 Child Psychology**

A review of the principles of child development from birth to pre-adolescence. Particular emphasis will be placed on intellectual, social, and emotional development. The theoretical formulations of psychoanalysis, social learning theory, and Piaget will be discussed in the context of relevant research in these areas, as well as their educational implications. (core course)

### **50.804 Adolescent Psychology**

Social, emotional, and intellectual development through the adolescent years. Problems in family relationships and in the adolescent's social environment as well as his adjustment in school. Case history material. (core course)

### **50.805 Personality and Social Structure**

Human behavior from a combined psychodynamic and sociological point of

view, with special emphasis on socialization and the relations between the individual and the collectivity. The integration of relevant theories from psychology, sociology, and anthropology. *Suggested Prep. a course in sociology, cultural anthropology, or social psychology.* (core course)

#### **50.806 Psychology of Learning**

The basic principles and conditions of acquisition, retention, and transfer of learning. *Suggested Prep. a course in psychology.* (core course)

#### **50.807 Abnormal Psychology**

How personality becomes disordered. Problems of neurosis, character disorders, psychosomatic disorders, and psychoses. Current methods of clinical diagnosis and treatment will be reviewed. (With the approval of the adviser, may serve as a core course for students majoring in Counselor Education, Rehabilitation Administration, Special Education, Speech Pathology and Audiology.)

#### **50.808 Seminar in Child Development**

A seminar course with emphasis on discussion of child development theories with special reference to personality and cognitive development. Critical evaluation of research related to child development theories with particular emphasis on recent trends, new approaches, and relevance to educational theories and practices. *Prep. a course in child psychology or human development.* (core course)

#### **50.809 Seminar in Adolescent Development**

A seminar course with emphasis on discussion of major problem areas facing the adolescent in our society today. Particular emphasis will be given to social and emotional development. Included will be a survey of research in such areas as psychoanalysis, social learning, morality, and delinquency. *Prep. a course in adolescent psychology or human development.* (core course)

#### **50.810 Psychology of Personality**

An examination of theoretical approaches to the study of personality, with emphasis upon theories dealing with dynamic factors in personality development. The role of social and cultural factors, as well as implications of various theories for the therapeutic processes, will be considered. *Suggested Prep. a course in psychology.* (core course)

#### **50.811 Psychology of Cognition**

A consideration of the processes involved in cognitive organization and functioning. Topics will include: language, concept formation, and problem solving. *Suggested Prep. a course in psychology.* (core course)

#### **50.812 History of Education**

An opportunity to explore some of the historical roots of contemporary educational theory and practice, with a focus on selected aspects of educational history from antiquity to the present. Also, an opportunity to utilize knowledge gained for the development of a personal educational position. (core course)

**50.813 Philosophy of Education**

An introduction to the basic precepts of philosophy as viable tools with which to build a philosophy of education. An analysis of major philosophic world-frames in their historical context; i.e., Aristotelian, Thomistic, idealistic, realistic, and pragmatic. An examination of philosophies of education which cover the broad spectrum of thought, ranging from authoritarian to democratic, determining from this examination where along the continuum to place the foundation from which to build one's own personal philosophy of education to be translated into conduct in the classroom. (core course)

**50.814 Nature and Theory of Psychological and Educational Measurement**

An examination of the logic of measurement and the nature of human capacities, aptitudes, and abilities. Characteristics of tests, ratings, questionnaires, and similar instruments are reviewed with emphasis on their reliability, validity, and useability. Item analysis procedures and test standardization are covered.

**50.815 Research Design in Education**

An introduction to scientific methods of research in education and related fields. Stress will be placed on critical reading and understanding of research literature, formulating research hypotheses, constructing a research proposal, and carrying out an individual or group project. This course must be included among the first six courses taken by each student. (core course)

A course in statistics, or competence in this field, as demonstrated by successful completion of a statistics proficiency exam, is required prior to taking this offering. A no-credit, no-charge programmed course in statistics has been arranged for this purpose and is available through the University's Learning Center, 406 Dodge. The regular tuition course, 50.841, is also available. Students choosing the proficiency exam route may also use the services of a special teaching assistant who has been appointed to advise and assist them. The office hours and location of the teaching assistant will vary from quarter to quarter and may be obtained from the Foundations Department Secretary in 306 Cushing.

**50.817 Advanced Research Design in Education**

Each student will identify a research problem, review the relevant research literature, design an appropriate methodology, and prepare a written research proposal. *Prep. 50.815 Research Design in Education.*

**50.818 Comparative Education**

Introduction to education in other nations, and exploration of its relationships with the political, economic, social, and cultural milieu. Selected countries in Western and Eastern Europe, South America, and Africa will be considered. (core course)

**50.819 Theories of Developmental Psychology**

The major developmental theories and related research of Havighurst, Erickson, Piaget, and others. *Prep. permission of instructor.*

**50.820 Seminar in Contemporary Issues in American Education**

Discussion of selected issues in contemporary American education such as school desegregation, compensatory education, learning problems of the disadvantaged, professionalization of teachers, etc. Review of relevant research and opinions. The topic or topics of the seminar for a particular quarter will be announced in the registration materials distributed in advance of that quarter. (core course)

**50.841 Introduction to Educational Statistics**

Basic descriptive statistics for measurement and research. Topics include use of statistical notation, measures of central tendency and variability, probability and sampling techniques, theoretical distributions, linear regression and correlation, and an introduction to statistical inference. (This course, or completion of a statistics proficiency examination, is required for admission to 50.815 Research Design in Education.)

**50.842 Intermediate Educational Statistics**

Statistical inference of normal populations and discrete data; estimation; testing of hypotheses; multiple correlation; analysis of variance and covariance; contingency; the chi-square test and other non-parametric tests. Emphasis is given to application in educational research.

**50.845-846 Independent Research Seminars I and II** (4 quarter hours each)

Focus is on the design, conduct, analysis, and reporting of data from an individual research project. This project may be original or secondary, applied, theoretical, or action research and must be substantially larger in scope than that accommodated by directed study. Evaluation will be based on oral and written interim reports in Seminar I and oral and written final reports in Seminar II. This course will serve as an option to the thesis requirement only for students enrolled in the master's degree program in Educational Research.

**50.847 Introduction to Computer Programming: FORTRAN IV**

A laboratory course designed to develop facility in the use of a wide range of data processing equipment in educational research. Students will be introduced to the basic principles of computer programming, but emphasis will be placed on the applicability and use of existing statistical programs.

**50.850 Communications Theory**

An introduction to communications theory, covering models of the communication process, attitude changes, information, innovation, dissemination and flow, communication modalities, and language processing. (core course)

**50.891 Thesis**

A research activity that may be elected by the student in lieu of two courses (8 quarter hours), with the approval and recommendation of the adviser.

**50.892 Dissertation Seminar**

This seminar is open only to doctoral candidates who are ready to begin work



on their dissertations. Although the dissertation proposal is formulated independent of the seminar, with the doctoral adviser and committee, this seminar will aid in proposal development and provide information on methodology, style, and mechanics of dissertation writing. *Prep. course in research methods in education (50.815 or equiv.) or permission of the instructor.*

#### **50.895 Institute in Foundations of Education**

(See general institute description on page 125.)

#### **50.898 Workshop in Foundations of Education**

(See general workshop description on page 126.)

#### **50.899 Directed Study**

This experience is provided for the student whose unique academic needs or interests cannot be adequately satisfied in any of the scheduled courses of the Department. *Prep. approval of the chairman of the Department and of the director of the Graduate School of Education. (Approval forms must be submitted during the quarter prior to registration for the Directed Study.)*

## **CURRICULUM AND INSTRUCTION**

#### **51.800 Principles of Teaching**

A consideration of the rational bases for effective teaching. Efforts are made to relate learning theory and educational objectives to various strategies and tactics of teaching. The functions of the teacher are examined as components of learner development. *Prep. must be taken concurrently with 51.863 Methods and Materials for Teaching Children I or 51.865 Methods and Materials for Teaching Adolescents and Adults I.* Offered Fall Quarter only. (Open only to students in the Nondegree Certification Program.)

#### **51.801 Curricula of American Schools**

Methods of organizing material to be learned at the state, district, school, and classroom level to meet the needs and to match the abilities of the students. Attention will be given to innovative practices which are found both within and outside of the public school system. *Prep. 51.800 Principles of Teaching; must be taken concurrently with 51.864 Methods and Materials for Teaching Children II or 51.866 Methods and Materials for Teaching Adolescents and Adults II.* Offered Winter Quarter only. (Open only to students in the Nondegree Certification Program.)

#### **51.805 Student Teaching with Related Seminar**

(8 quarter hours)

A University-arranged practicum of observation and teaching in schools offering comprehensive programs within reasonable commuting distance of the University. Participating on a full-time basis, the student is expected to develop planning and communication abilities within his major field. Biweekly seminars at the University provide additional opportunity to analyze theory-practice relationships and to examine generic problems of teaching. *Prep. course in child or adolescent psychology; 51.800 Principles of Teaching; 51.801 Curricula of American Schools; 51.863-864 Methods and Materials for Teaching Children I & II or*

*51.865–866 Methods and Materials for Teaching Adolescents and Adults I & II.* Generally completed during the Spring Quarter. (Open only to students in the Nondegree Certification Program.)

**51.810 Modern Topics in Elementary School Mathematics**

An introduction to the modern elementary school mathematics curriculum for teachers and students preparing to teach, who are not acquainted with these topics.

**51.811 Mathematics of the Primary Grades**

The concepts of arithmetic and geometry found in modern mathematics courses for grades K-3. *Prep. teaching experience.*

**51.812 Mathematics of the Middle Grades**

The concepts of arithmetic and algebra found in modern mathematics courses for grades 4–6. *Prep. teaching experience.*

**51.813 Informal Geometry for Teachers**

The concepts of geometry found in the modern mathematics curriculum of grades 4–8. *Prep. teaching experience.*

**51.824 The Teaching of Geometry in the High School**

A study of students, teaching methods, and courses in geometry, with re-examination of selected background topics, including two-value logic, methods of proof, postulational systems, and analytical methods.

**51.825 Seminar in Mathematics Education**

Each student is expected to analyze a mathematics learning problem, to investigate relevant research, and to prepare materials embodying his own proposed solution. *Prep. permission of instructor.*

**51.828 The Teaching of Elementary Calculus**

An examination from an advanced viewpoint of selected topics in elementary calculus, including limits applied to formal differentiation, continuity, uniform continuity and intermediate values, boundedness and existence of extremes, differentiable functions, areas and integration, and properties of the Riemann integral. *Prep. teaching experience.*

**51.830 Concepts of Earth Science for Elementary Teachers**

Selected topics in the earth sciences considered from a philosophical and/or historical point of view, to illustrate and emphasize man's interrelationship with his ecological environment; with laboratory work. (51.830, 51.831, and 51.832 are not sequential, and may be taken in any order.)

**51.831 Concepts of Biology for Elementary Teachers**

Selected topics in the biological sciences considered from a philosophical and/or historical point of view; a realistic consideration of man's place in his biological world; with laboratory work. (51.830, 51.831, and 51.832 are not sequential, and may be taken in any order.)

**51.832 Concepts of Physical Sciences for Elementary Teachers**

Selected topics in the physical sciences considered from a philosophical and/or historical point of view; the appraising of claims and counter-claims relative to the pollution of man's physical environment; with laboratory work. (51.830, 51.831, and 51.832 are not sequential, and may be taken in any order.)

**51.837 Curriculum Problems in Science and Mathematics Education**

The process of identifying problems and evaluating proposed solutions, taking into consideration the needs of the student population, the dichotomy of theory and applications in course design, and the role of common processes and conceptual schemes in integrating seemingly disparate courses. Traditional and modern programs will be investigated in terms of the problems they were designed to solve, their success or failure in this mission, and the relevance of such programs to present problems. *Prep. teaching experience or certification.*

**51.838 Seminar in Science and Mathematics Teaching**

The analysis and evaluation of a number of types of teaching strategies and learning materials, including laboratory materials and techniques, printed matter of all types, games, kits, multimedia materials, and interactive computer programs. Each student will be expected to undertake an extensive project applying his knowledge of strategies and materials to the achieving of previously identified objectives and appropriate to a given class, group, or individual student. *Prep. teaching experience or certification.*

**51.839 Implementing Change in Science and Mathematics Education**

The planning, organization, and execution of in-service experiences for teachers, related to all phases of science and mathematics education from subject-matter courses to curriculum planning to materials workshops. *Prep. teaching experience or certification.*

*Recommended: 51.837 Curriculum Problems in Science and Mathematics Education, 51.838 Seminar in Science and Mathematics Teaching, and 51.881 The Dynamics of Curriculum Development.*

**51.842 The English-Language Arts Curriculum**

The design and function of the English-language arts curriculum; selected current issues as they impinge upon the English-language arts curriculum; the design and function of research in the English-language arts curriculum. Open to certified or experienced teachers; required of all candidates for the Master of Education in Curriculum and Instruction: English, and the Master of Education in Curriculum and Instruction: Language Arts. *Prep. permission of instructor.*

**51.846 English as a Second Language I**

First course in teaching ESL, introducing the basic linguistic, cultural, and psychological concepts. Analysis of current approaches to teaching ESL locally and internationally from the standpoint of diagnosis, grouping, use of particular methods, and materials. Observations of local ongoing ESL programs will be included. *Prep. 51.871 Reading and Language Disabilities I or permission of instructor.*

**51.847 English as a Second Language II**

Second course in the ESL sequence which emphasizes innovative means in teaching ESL. Specific projects according to student need and interest will be developed; supervised clinical work. *Prep. 51.846 English as a Second Language I.*

**51.849 Topics in English-Language Arts Education**

An investigation of a matter of immediate concern to English-language arts education, but for which no organized study is ordinarily available. Typical topics are: media in the English-language arts program; behavioral objectives in the English-language arts program; the English-language arts program for the disadvantaged. Each year the seminar topic for that year is announced prior to registration.

**51.851 Seminar in Current Issues in the Social Studies**

A content approach to problems of political, economic, and social significance which have contemporary relevance for teachers of the social sciences.

**51.853 History and the Social Studies in the School Curriculum**

Permits the student to explore some of the fundamental concepts of anthropology, sociology, economics, political science, and history. Emphasis will be given to the interrelatedness of disciplines and to the extraction of operating principles from those that aid in the analyses of social problems. As a consequence of such analysis, the student should be equipped to find a greater variety of conceptual relationships within the historical social science field. From there a framework for evolving courses of study can be generated. *Prep. teaching experience or certification.*

**51.854 Social Science Materials Seminar**

A curriculum course wherein the knowledge previously acquired will be used to establish criteria for the selection and development of curriculum materials. All materials of instruction will be viewed as means of implementation of objectives relating to specific social science concepts and skills. An effort will be made to personalize and concretize abstract phenomena and to demonstrate their impact on the quality of human lives. Students will examine and analyze prepared curricula and will be asked to develop original materials that include provision for the integration of a variety of thinking, reading, and social skills. *Prep. teaching experience or certification.*

**51.861 Principles of Programmed Instruction**

The development and current status of self-instructional devices. A survey of available programs and teaching machines, with emphasis on the details of the construction and evaluation of programs.

**51.863 Methods and Materials for Teaching Children I**

Teaching methods and learning materials used in teaching children in a number of educational settings. This course will help students establish objectives, plan and execute appropriate learning experiences, and evaluate outcomes. *Prep.*

*must be taken concurrently with 51.800 Principles of Teaching. Offered Fall Quarter only. (Open only to students in the Nondegree Certification Program.)*

#### **51.864 Methods and Materials for Teaching Children II**

A continuation of 51.863. *Prep. 51.863 Methods and Materials for Teaching Children I; must be taken concurrently with 51.801 Curricula of American Schools.* Offered Winter Quarter only. (Open only to students in the Nondegree Certification Program.)

#### **51.865 Methods and Materials for Teaching Adolescents and Adults I**

Teaching methods and learning materials used in teaching adolescents and adults in a number of educational settings and for a number of purposes. The course will help students identify objectives, plan and execute appropriate learning experiences, and evaluate outcomes. *Prep. must be taken concurrently with 51.800 Principles of Teaching.* Offered Fall Quarter only. (Open only to students in the Nondegree Certification Program.)

#### **51.866 Methods and Materials for Teaching Adolescents and Adults II**

A continuation of 51.865. *Prep. 51.865 Methods and Materials for Teaching Adolescents and Adults I; must be taken concurrently with 51.801 Curricula of American Schools.* Offered Winter Quarter only. (Open only to students in the Nondegree Certification Program.)

#### **51.870 Developmental Reading and Writing**

Reading and writing as the receiving and generating of language; current developmental reading, writing, and related language skills; selected research findings bearing on relevant topics. Required of candidates for Master of Education in Curriculum and Instruction: Reading Certification; Curriculum and Instruction: English; Curriculum and Instruction: Language Arts. *Prep. permission of instructor.*

#### **51.871 Reading and Language Disabilities I**

Reading and language disabilities; causes and correlates of disability; language differences; aspects of measurement; diagnostic and corrective procedures in reading, writing, and related language skills; selected research findings bearing on relevant topics. Required of candidates for Master of Education in Curriculum and Instruction: Reading Certification; Curriculum and Instruction: English; Curriculum and Instruction: Language Arts. *Prep. 51.870 Developmental Reading and Writing.*

#### **51.872 Literature and Materials Seminar**

Literature for children, adolescents and adults; the sources of interest in literature as they relate to the reader; the interrelatedness of literature and the other components of the language arts program; investigation of materials available. Students will develop projects related to their needs and interests. Required of candidates for Master of Education in Curriculum and Instruction: Reading Certification; Curriculum and Instruction: English; Curriculum and Instruction: Language Arts.

**51.873 Reading Clinic I**

Practicum in clinical experience. Children and adults with severe reading disabilities will be tutored in the Reading Clinic twice a week for 1¼ hours each session, under close staff supervision. A one-hour seminar will follow each tutoring session for purposes of discussion and case presentation. A diagnosis, lesson plans, daily logs, complete case history, and a final progress evaluation will be required of each student. May be taken concurrently with 51.871. *Prep. 51.870 Developmental Reading and Writing.*

**51.874 Reading and Language Disabilities II**

Second course in Reading and Language Disabilities, including an examination of selected models of language processes; cognitive and affective dimensions; problems in language pathology; and other learning disabilities including academic, perceptual-motor, and neurological areas. *Prep. 51.871 Reading and Language Disabilities I and 51.873 Reading Clinic I.*

**51.875 Reading Clinic II**

A continuation of the Practicum. Requirements and format will be the same as Clinic I. May be taken concurrently with 51.874. *Prep. 51.871 Reading and Language Disabilities I and 51.873 Reading Clinic I.*

**51.876 Teaching Reading in Junior and Senior High School**

Developmental or corrective reading programs at the secondary level. Development of reading rate, comprehension, interpretation, and study skills in the content areas.

**51.877 Linguistics and Reading**

An introductory course in linguistics. The following topics will be examined as applied to the reading process and the teaching of reading: characteristics and systems of natural languages; development of the English language; language acquisition and dialectology. Selected models of language processes will be examined in light of recent linguistic theory. *Prep. 51.871 Reading and Language Disabilities I.*

**51.880 Evolution and Revolution in the School Curriculum**

Examination of the curriculum of the American school as an expression of conflict between subject-centered and student-centered curricula, traditionalists and revisionists, behaviorism and psycho-dynamism, and the interplay of forces generated by students, teachers, administrators, and other interested groups. Present school curricula will be analyzed as the outcomes of such conflicts and trends for the future development of school curricula will be hypothesized. *Prep. experience or certification.*

**51.881 The Dynamics of Curriculum Design**

Identification and analysis of problems in curriculum and instruction in light of the forces affecting the curriculum within the student's area of specialization; design and implementation of solutions to such problems; evaluation and field-testing where feasible, of these solutions. *Prep. 51.880 Evolution and Revolution in the School Curriculum.*

**51.891 Thesis**

A research activity that may be elected by the student in lieu of two courses (8 quarter hours), with the approval and recommendation of the adviser.

**51.894 Workshop in Supervision of Instruction** (6 quarter hours)

A workshop for teachers and other specialists in English, mathematics, science, social studies, and reading in schools and other educational institutions, which emphasizes the nature of the supervisory role and appropriate tasks for professional people overseeing the work of other professional people, at all levels of education. The workshop will focus upon the critical role of the relationship between supervisory functions and the quality of the performance and the needs for improvement of the individual being supervised. The supervising professional will be seen as a skilled, experienced, and sensitive person who can oversee the work of others as well as understand a great deal about the curriculum and the specific content, skills, and understandings it embraces, and how to communicate these to students. Will include a weekly seminar dealing with matters of a generic nature concerning the nature of supervision at all levels and within the total curriculum of schools or other educational programs and small group seminars. Participants may consider the problems related to more specific content areas and levels, and supervised field work.

**51.895 Institute in Elementary Education**

(See general institute description on page 125.)

**51.896 Institute in Secondary Education**

(See general institute description on page 125.)

**51.897 Workshop in Elementary Education**

(See general workshop description on page 126.)

**51.898 Workshop in Secondary Education**

(See general workshop description on page 126.)

**51.899 Directed Study**

This experience is provided for the student whose unique academic needs or interests cannot be adequately satisfied in any of the scheduled courses of the Department. *Prep. approval of the chairman of the Department and of the director of the Graduate School of Education. (Approval forms must be submitted during the quarter prior to registration for the Directed Study.)*

**51.900 Cooperative Education in America**

An examination of cooperative education as a complex tool for achieving goals of education. Attention will be directed to its psychological implications for the individual, its social implications for the nation, and its place in educational thought. American higher education will be the principal focus of these considerations.

**51.920 Methods and Materials in Adult Literacy Education**

This introductory course includes a review of current ABE programs around the country with particular emphasis on the programs in Boston, e.g., OIC (Opportunities Industrialization Center), New Urban League, WIN (Work Incentive Program), and public school programs for adults. This review of the programs will include a study and some observation of ongoing programs in the area, especially the WIN program presently being run by the University. Specifically, students will discuss, observe, and study various approaches to ABE programs in terms of curriculum, methodology, materials used, groupings, and evaluation.

A major objective of the course will be to become more aware of the psychological problems of adult readers and nonreaders. Adult behavior and learning will be studied; the effects on learning of particular environmental forces (e.g., black ghetto, Indian reservation, rural-urban factors, etc.); methods of teaching adults at various levels will be studied and observed, as will a wide range of currently available books and materials for adult programs. All students may do some supervised clinical work with adults in the Reading and Learning Clinic; logs will be kept on the diagnostic and corrective work developed for each student. *Prep. permission of instructor.*

**EDUCATIONAL ADMINISTRATION****52.805 Simulated Problems: Secondary School Administration**

The workshop is designed to place each student in a simulated decision-making situation as a principal or administrator of a secondary school. Background materials have been prepared which describe all aspects of a fictitious school system, including its publics, its policies, its certified and noncertified staff members, and its geographical and socio-economic makeup. These background data are disseminated through motion pictures, film strips, and taped interviews with influential people in the fictitious community, as well as through written materials. *Prep. 52.810, 52.811, or permission of instructor.*

**52.806 Directed Field Experiences in the Administration of the Elementary School**

Required of all master's candidates who major in school administration. Study and discussion of administrative functions will be coordinated with selected field trips to administrative settings and with guest lectures by practicing elementary school administrators. These experiences usually involve visits to such settings as: an elementary school, a middle school, a superintendent's office, a school committee meeting, and appropriate federal and state agencies. In addition, each student will be expected to participate in an administrative field experience in an elementary setting for a minimum of four hours per week. *Prep. 52.810 or permission of instructor.*

**52.807 Directed Field Experiences in the Administration of the Secondary School**

A companion course to 52.806; required of all master's candidates in school administration. Study and discussion of administrative functions will be coordinated with selected field trips to administrative settings and with guest lec-



tures by practicing secondary school administrators. These experiences are aimed at educational agencies at the secondary level and will include visits to a comprehensive high school, a junior high school, a regional vocational-technical school, a superintendent's office, a school committee meeting, and appropriate federal and state agencies. In addition, each student will be required to participate in an administrative field experience in a secondary school for a minimum of four hours each week. *Prep. 52.810 or permission of instructor. (52.807 may be a continuation of 52.806 or may precede it.)*

### **52.808 Seminar in Educational Administration**

A culminating experience for students majoring in school administration at the master's level. A student is confronted with major issues facing the school and its administrators. Great emphasis is placed upon applying knowledge gained in previous administrative courses to an understanding of contemporary educational problems. *Prep. 52.810, 52.811, or permission of instructor.*

### **52.810 Leadership in Education, Part I**

Part 1 of a two-term core course designed to introduce the student to concepts of formal organization. This core, consisting of a two-part sequence, is prerequisite to further study in the Department of Educational Administration. Part I provides the student with an overview of formal organizations as social systems, with emphasis given to the leadership function. Relationships between individuals and organizations are considered. Communications and decision-making functions are analyzed and examined.

### **52.811 Leadership in Education, Part II**

Part II continues an emphasis on the leadership function in organizations. It examines selected informal organization elements such as motivation, normative order, social power, conflict, conformity, and creativity. Attention is given to processes of change and innovation in organizations. *Prep. 52.810 must be completed before enrollment in 52.811.*

### **52.813 Instructional Leadership: Curriculum Development and Supervision**

Views the responsibilities of administrative personnel relating to the improvement of curricular and instructional practices. Evaluative techniques, in-service education, supervisory procedures, and innovative programs are among the areas of consideration. Opportunities are extended for students to become engaged in supervisory projects individually or in small teams. *Prep. 52.810 and 52.811, or permission of instructor.*

### **52.814 Simulated Problems: Elementary School Administration**

The workshop is designed to place each student in a simulated decision-making situation as a principal or administrator of an elementary school. Background materials have been prepared which describe all aspects of a fictitious school system, including its publics, its policies, its certified and noncertified staff members, and its geographical and socio-economic makeup. These background data are disseminated through motion pictures, film strips, and taped interviews with influential people in the fictitious community, as well as through written materials. *Prep. 52.810, 52.811, or permission of instructor.*

**52.815 Simulated Problems: Administration of Occupational Education**

Each student is confronted with a series of simulated decision-making situations such as those which are usually faced by administrators of programs in the area of occupational education. Readings, audiovisual material, and class interactions aid in making this experience a most rewarding one.

**52.816 Seminar in Career Education**

Students will be confronted with a sampling of the major issues facing administrators and supervisors of occupational and career education programs in their efforts to organize, promote, and operate such programs. Emphasis will be placed on applying the knowledge acquired in previous courses and other program experiences to arrive at a better understanding of contemporary occupational and career education problems and their solutions.

**52.817 Design, Production, and Utilization of Instructional Materials**

Deals with all aspects of instructional media, surveying types, techniques, advantages, limitations, sources, and methods of use of materials and equipment in specified areas. Emphasis is on the selection of appropriate media to suit given learning objectives. Laboratory experience in operation of equipment and the production of instructional materials is provided.

**52.818 Developing Curriculum Learning Packages**

During this course each student will produce a self-correcting, self-pacing, self-directing learning package. Individualized programs currently using the concept of contract learning will be reviewed and evaluated.

**52.819 Introduction to Instructional Television**

Concerned with operation of an instructional television studio and the production of television programs for direct instruction. Each student will write, direct, and evaluate a short television program in any curriculum field and area of his choice.

**52.820 Principles of Programmed Learning**

Will cover the development and current status of self-instructional devices and programs. Students will survey available programs and teaching machines, with emphasis on details concerning construction, selection, evaluation, administration, and use of programs.

**52.821 Administration of Instructional Media Programs**

Addresses itself to the various aspects and problems involved in the management and operation of educational media programs. Public school, university, medical center, commercial, and industrial training program settings are considered in terms of service, instruction, and research.

**52.822 Foundations of Instructional Communications and Technology**

Introduction to the concepts and principles of the learning process, communications, multimedia instruction and instructional systems. Surveys will include programmed instruction, instructional television, games and simulation, audio-

tutorial laboratories, computer-assisted instruction (CAI), computer-managed instruction (CMI), curriculum learning packages, mediated teaching units, individualized instruction, performance contracting, validated instruction, and criterion-referenced testing. Discussion will involve problems of administration and economics of instructional communications and technology in school systems and training centers.

### **52.823 Principles of Instructional Systems Development**

Introduction to the concept of a system as it relates to the instructional process. Each student will select a problem in any area of his choice and conduct a complete systems analysis and systems synthesis to resolve the problem. The contributions of the behavioral sciences as they relate to systems development will also be reviewed.

### **52.824 Administration of Cooperative Education**

An examination of significant elements in the planning, implementation, and operation of a cooperative education program. Areas of concern include: agents for institutional change, intra-institutional relationships, program costs and funding sources, cooperative education calendars, development of cooperative work assignments, relationships with cooperative employers, and operational policies.

### **52.826 Administration of the Elementary School**

A survey of the operational tasks performed by the elementary school administrator. Included will be: school-community relations, student personnel, staff personnel, curriculum and instruction, physical facilities, finance and business management, and organizational structure. *Prep. 52.810, 52.811, or permission of instructor.*

### **52.827 Administration of the Secondary School**

A survey of the operational tasks performed by the secondary school administrator. Included will be: school-community relations, student personnel, staff personnel, curriculum and instruction, physical facilities, finance and business management, and organizational structure. *Prep. 52.810, 52.811, or permission of instructor.*

### **52.891 Thesis**

A research activity that may be elected by the student in lieu of two courses (8 quarter hours), with the approval and recommendations of the adviser.

### **52.895 Institute in Educational Administration**

(See general institute description on page 125.)

### **52.898 Workshop in Administration**

(See general workshop description on page 126.)

### **52.899 Directed Study**

This experience is provided for the student whose unique academic needs or interests cannot be adequately satisfied in any of the scheduled courses of the

Department. *Prep. approval of the chairman of the Department and of the director of the Graduate School of Education. (Approval forms must be submitted during the quarter prior to registration for the Directed Study.)*

## **CAGS AND DOCTORAL COURSE OFFERINGS IN EDUCATIONAL ADMINISTRATION**

*(Open only to CAGS and doctoral degree candidates or by special permission of the chairman of the Department, granted prior to registration.)*

### **52.830 Current Issues in Educational Administration**

A seminar required of all students pursuing the CAGS. Critical and contemporary issues which face school administrators will be examined closely. The status of the administrator; federal, state, and local revenue sources; accountability; the voucher plan; teacher militancy; equal educational opportunity; conflicts with religious organizations; control of schools; urban education problems; cultural deprivation; and human rights are examples of topics that will be analyzed.

### **52.831 Innovation and Change in American Public Schools**

A seminar required of all students pursuing the CAGS. Although major emphasis will be given to curriculum and instruction, attention will also be given to planned change in other critical areas such as team teaching, modular scheduling, non-gradedness, educational parks, programmed instruction, in-service education, individualizing education, and teacher-learner relationships.

### **52.832 The Process of Administration**

Simulation, case analysis, and role-playing will be utilized to gain insight into such topics as the improvement of organizational morale, professional job satisfaction, and current issues of involvement and conflict. Alternative courses of action are studied to cope with problematical events confronting educational administrators.

### **52.834 Educational Finance**

The study of school finance deals with the principles and problems of financing education, and also considers the basic concepts of economics relative to the place of school finance in the field of public finance. The sources and rationale for public support of schools are examined. Selected state and federal aid programs, capital outlay programs, current practices and issues of local support, and bond issue campaigns are included in this study.

### **52.835 School Business Management**

Practices and issues in the administration of school business affairs are the major concern of the course. The role of the school business administrator and the educational budget will be examined. Attention will be paid to principles of budget preparation and development, purchasing, supply management and distribution, school accounting and data processing systems, auditing, financial reporting and management of payroll, transportation programs, school food services, and the operation and maintenance programs for the physical plants.

In addition, each student will be placed in a simulated decision-making situation. Background materials have been prepared which describe aspects of a fictitious school system, including its publics, policies, and other relevant information. Each student will have the opportunity to deal with matters typically faced by the school business administrator.

#### **52.836 Personnel Administration**

The purposes, patterns, and issues in personal administration are the major considerations of the course. Study will include the skills, attitudes, and knowledge which an institutional staff needs to have and which are essential to the accomplishments of organizational goals. Personnel administration programs and problems of student personnel, para-professional, nonprofessional, and professional staff members will serve as the focus for the course.

#### **52.837 School-Community Relations**

This course includes the study and design of school-community relations programs based on the principles and practices of the intercommunications between the school and its several publics. Selected research findings relative to public relations programs in business, industry, and governmental agencies will be reviewed in addition to those involving educational systems. Stress will be placed on the role of the administrator in the development of a comprehensive program of school-community relations for his administrative unit.

#### **52.838 School Plant Planning, Operation, and Maintenance**

This course seeks to have the student develop a basic understanding of the processes involved in the planning, maintenance, and operation of school plants. Such items as educational specifications, the process of school construction, techniques used to provide clean, safe, and healthy environments for the teaching-learning process, along with the selection, assignment and supervision of custodial and maintenance staff will be involved. Statutes or regulations pertaining to these processes used by state and local regulatory bodies will also be reviewed.

#### **52.840 Problems in School Administration: A Simulated Experience — The Superintendency**

#### **52.842 Problems in School Administration: A Simulated Experience — Assistant Superintendent for Instructional Services**

These courses are designed to place each student in a simulated decision-making situation in his area of concentration. Background materials have been prepared which describe all aspects of a fictitious school system, including its publics, policies, certified and noncertified staff members, and the geographical and socio-economic makeup of the community. These background data are disseminated through motion pictures, film strips, and taped interviews with influential people in this community as well as through written materials.

#### **52.843 Administrative Internship**

This is an individualized offering involving supervised observations, internships,

externships, and seminars in educational administration, and it is designed to provide further practical experience in the student's area of administrative preparation. The administrative internship program must be worked out well in advance with the adviser.

#### **52.844 School Law**

The student will be expected to develop a basic understanding of federal and state laws that apply to school systems, educational programs, and personnel, as well as of the legal prerogatives available to the practicing administrator and the local boards of education. This study will include consideration of the constitutional, statutory, and common-law foundations of educational systems and the school administrator's role with respect to them.

#### **52.845 Seminar in Media Research and Learning**

Provides for surveys, critical analyses, and discussions of current research dealing with learning principles, communication theory, media, and instructional systems design. Oral and written reports are required. Experimental and field research are considered for additional credit in subsequent terms.

#### **52.846 Developing Curriculum in Learning Packages — Advanced**

Using the instructional development techniques acquired in the introductory course, students will design a more sophisticated learning package, field test it, and using the test data, revise the package until the predetermined criteria are met.

#### **52.847 Cataloguing and Classification of Instructional Materials**

The principles, codes, and techniques utilized in organizing both print and non-print materials in an integrated collection. Emphasis on the application of bibliographic methods of control to films, records, slides, cassettes, kits, and other media. Acquaintance with the sources and tools listing instructional materials for the purpose of ordering them, and the development of the skill which assists the user in locating them.

#### **52.850–851–852 Doctoral Seminar in Leadership: Administration and Supervision I, II, III**

A series of three seminars required of all students pursuing the Ed.D. degree. The dialogues in these courses will use an interdisciplinary approach to explore complex behavioral and structural interactions found in formal organizations. Major emphasis will be placed upon integrating theoretical concerns with practical administrative functioning.

This sequence of seminars is viewed primarily as a pooling of the results of extensive individual student research and activities and is aimed at giving the student an overview of all aspects of the institution he will be leading.

#### **52.853 Systems Theory in Education**

A course open only to students pursuing the Ed.D. degree, this course will provide the student with an introduction to general systems theory and the implica-

tions of systems theory to leadership, administration, and supervision. The course will include examination of systems application such as PERT, PPBS, MIS, and CIPP. Special consideration will be given to systems study as a method of planning and evaluation.

#### **52.854 Organizational Analysis**

A course open only to students pursuing the Ed.D. degree, this course will include examination of different approaches used to define traits or characteristics of formal organization. Special emphasis will be placed on the application of models, typologies, and schemes to identify structural or procedural deficiencies in bureaucratic social systems.

#### **52.860 Academic Administration in Higher Education**

Recruitment of properly qualified faculty and staff is only one problem of the academic administrator. This course will also consider the problems of: pupil services, admissions, athletics, curriculum development, accreditation, instructional resources, registration and scheduling, faculty organization, continuing education, faculty rights and responsibilities, and personnel policies.

#### **52.861 Problems in College Administration: A Simulated Experience**

This seminar is designed to place each student in simulated decision-making situations as an administrator of a college or junior college. Background materials have been prepared which describe all aspects of a fictitious college including its policies, makeup of faculty and student body, its financial situation, the community it serves, and its board of control. These data are disseminated through motion pictures, film strips, and taped interviews with fictitious people, as well as through written materials.

#### **52.862 Institutional Planning and Facilities**

This course will consider the planning of new colleges as well as the expansion and maintenance of existing ones. Systems analysis, needs surveys, and development of educational specifications for college facilities will constitute half of the course. The other half will involve the operation and maintenance of the physical plant, including provisions for housing, safety, parking, communications, and health service.

#### **52.863 Financial Management in Higher Education**

This course seeks to combine a knowledge of fundraising activities with the study of proper financial management in higher educational institutions. The problems of fundraising for both public and private, two- and four-year institutions will be considered. Modern techniques of budget preparation and control will include purchasing, school accounting, data processing, providing benefits for faculty, financial reporting, food services, housing, and operation and maintenance of physical plant.

#### **52.864 Typologies of Higher Education**

A study of the types of higher educational institutions, with emphasis on organizational structure, modes of governance, and administration. The history of

higher education, particularly the development of colleges, universities, and junior colleges in the United States, will be considered to provide perspective for the modern college administrator. Important issues and the problems they presented for administrators will provide the major focus of this course.

#### **52.865 Systems Theory in Education**

A course open to all students pursuing the Certificate of Advanced Graduate Study. This course will provide the student with an introduction to general systems theory and the implication of systems theory to leadership, administration, and supervision. The course will include examination of systems applications such as PERT, PPBS, and flowchart development. Special consideration will be given to systems study as a method of planning and evaluation.

#### **52.866 Politics and Educational Decision Making**

This course examines federal, state, and local governmental arrangements and political processes which influence educational policies of school systems. Emphasis is given to the application of political science concepts and research methods to educational policy-making processes and to the political environment surrounding the educational administrator.

#### **52.867 Administration of Adult and Continuing Education**

The historical development of adult and part-time education, with attention to the present status and trends for the future, will be studied, with emphasis on the administration of these programs. A variety of adult educational programs in schools, colleges, junior colleges, religious agencies, social service organizations, business and industry, and professional organizations will be included, focusing on planning, implementing, administering, financing, and evaluating such programs.

#### **52.868 The Community College**

Emergence of the community college movement in the United States; administrative structures and governance; the role of faculty in planning. The student population and related student personnel services will be examined. Particular emphasis is placed upon the identification and utilization of community resources in curriculum development and the college's total relationships with the community in which it exists. The two-year technical institute and both publicly and privately supported junior colleges will be studied. Field visits are an integral part of course requirements.

#### **52.893 Doctoral Dissertation**

(8 quarter hours)

*Prep. admission to candidacy in the Doctor of Education degree program.*

#### **52.899 Directed Study**

This experience is provided for the student whose unique academic needs or interests cannot be adequately satisfied in any of the scheduled courses of the Department. *Prep. approval of the chairman of the Department and of the director of the Graduate School of Education. (Approval forms must be submitted during the quarter prior to registration for the Directed Study.)*



## **COUNSELOR EDUCATION**

### **53.800 Foundations of Guidance and Human Services**

A philosophically-, theoretically-oriented course dealing with the current social context of the "counter-culture," the nature of humanness, and the relation of these two aspects to guidance services in schools and human services in other educational and community settings. Course procedures will emphasize the development of student self-understanding, and increased awareness of social and institutional structures and their effect on human beings. The helping person as an agent of social and institutional change will be the focus of the latter half of the course.

### **53.801 Tests and Test Procedures**

The principles and problems of psychological testing as applied to the work of the counselor are discussed. Some consideration is given to technical concepts as they apply to the treatment, use, understanding, and interpretation of test scores. The student is made familiar with some of the currently used tests of intelligence, scholastic aptitude, differential aptitudes, achievement, interest, and personality. Tests are evaluated for use in education and guidance. Problems of test interpretation are emphasized.

### **53.802 Vocational Development and Occupational Information**

A dual-emphasis course dealing, first, with theories about how individuals make decisions concerning their choice of vocation, and second, with the kind of data which is needed to assist people with these decisions. This requisite data deals with the following areas: the relationship of social and economic change to occupational trends; the classification and description of occupational fields; methods of collecting, evaluating, filing, and disseminating vocational information; and the role of the counselor in fulfilling these functions.

### **53.804 Counseling Theory and Process**

A required course for all Counselor Education degree candidates which must be taken in the Fall Quarter concurrently with the beginning of Practicum. The course will provide the student, through self-instructional materials, with a basic cognitive understanding of several major theoretical approaches to counseling. Classroom content will help the student to become familiar with a wide range of individual counseling strategies; to develop listening, understanding, and communications skills; and to further probe his own self-understanding as a counselor. These skills and understandings will be discussed and simulated in the context of a variety of settings with a variety of clients. Role playing, case material, and audio and video materials will be utilized in the instruction. This course will not be open to special students, but may be elected by degree candidates in other departments.

### **53.805-806 Counseling Practicum**

(8 quarter hours)

The counseling practicum is a supervised counseling experience extending over the academic year. Although registration for this course occurs only during the Winter and Spring Quarters, students will actually begin their practicum in the

Fall Quarter. Emphasis in the fall will be on small-group seminars dealing with counseling and other related matters. The Winter and Spring Quarters will concentrate on the supervised counseling assignment. Assignment to practicum settings will be made according to the student's major area of concentration. Students must make themselves available a minimum of one and a half days per week during the academic year (October to June) for placement in a field setting. Seminars will stress material germane to the student's major and will meet a total of 24 times during the year. (For administrative purposes, these practicum course numbers will apply to each of the following specific practicum placements: Elementary School Practicum, Secondary School Practicum, College, Mental Health and Rehabilitation Practicums.)

Part-time students must submit an application for practicum (available from the Department) by March 30, for approval to enroll in the practicum the following Fall Quarter. *Prep. 53.800 Foundations of Guidance and Human Services and 53.804 Counseling Theory and Process, both of which may be taken concurrently with the beginning of practicum.*

### **53.807 Administration of Guidance Services**

An advanced-level guidance course designed to help meet the certification requirements for guidance directors in Massachusetts. The course will cover philosophies, principles, and methods of establishing and administering guidance programs in the public schools. Simulated materials are used to replicate actual guidance problems dealing with testing programs, budgeting, interpersonal relationships, and other practical matters.

### **53.808 Group Counseling**

An introduction to theory, principles, and techniques of counseling with groups of individuals at different levels of development and for varying purposes. A basic mode of approach will be to involve students in a genuine group counseling experience in order to understand the phenomenon of group experience. *Prep. 53.804 Counseling Theory and Process or permission of instructor.*

### **53.809 The College Student and His Campus**

The relationship between college students and their environment will be examined. Focus is on student rights, emotional concerns, and the search for identity. The impact of societal forces and nontraditional patterns of study on student behavior are stressed. Varying concerns of personnel services in different types of college climates, including the community college, are discussed. Current issues in higher education are examined as they relate to services to students.

### **53.810 Elementary School Guidance**

Required for elementary counseling majors, this course has three principal objectives: 1) to gain a theoretical understanding of the personal, social, academic, and vocational development of children between the ages of 5 and 12 years; 2) to conceptualize the roles, functions, and goals of the elementary school counselor; and 3) to begin to consider a variety of programmatic strategies to operationalize the goals of the elementary school counselor. Topics to be studied

include values clarification, decision making, developmental guidance, major theoretical approaches to development, the issue of exceptionality, occupational information and vocational development, and confluent education. These topics are set in the context of the elementary school counselor's role as a counselor/consultant/coordinator for the total elementary school population.

### **53.811 Family and Parent Counseling**

The family will be studied as an institution, as an arena of interpersonal transaction, and as a seedbed of both distress and health. Various modes of counseling families will be presented, together with the theoretical notions underlying their use. The course will also demonstrate counselor-parent relations in the context of the school setting. *Prep. 53.804 Counseling Theory and Process or permission of instructor.*

### **53.812 Seminar in Student Personnel Work**

Relevant topics and cases for personnel workers and administrators in higher education will be discussed and studied in depth. The expertise of appropriate specialists will be utilized.

### **53.813 School Counseling Strategies**

Intended primarily for students who will counsel in school settings or other settings emphasizing work with children and adolescents. A broad range of approaches will be considered, including, but not limited to, behavior modification and Gestalt and Adlerian strategies. Special emphasis will be placed on the development of strategies designed to help alleviate typical school-related and developmental problems such as nonachievement, decision making, negative self-identity, and disruptive behavior. Consideration will also be given to the counselor's role as a consultant to teachers, parents, and administrators in effecting positive behavior change. *Prep. 53.804 Counseling Theory and Process.*

### **53.814 Vocational Counseling Strategies**

Develops an understanding of the essential ingredients of a self-awareness program especially in relation to a person's role expectations in the world of work. Vocational counseling is viewed as dealing with the entire individual, including his values, underlying psychological needs and drives, and the influence of the environment on one's present level of development and career awareness. Other topics to be developed in this course will include counseling with females and nonachievers, the decline of the work ethic, community resource development, job placement, and information giving as a perceptual process. *Prep. 53.804 Counseling Theory and Process. The course is intended for a variety of client populations from adolescence through adulthood.*

### **53.815 Rehabilitation Counseling Strategies**

Primary emphasis will be on the roles and functions of the rehabilitation counselor, relevant issues in the field, and an overview of the rehabilitation process. Special problems and techniques of counseling with the disabled (physical, mental, and behavioral disorders) will be examined through case studies and

role playing. Disability in the context of social deviance will be discussed, and psycho-social approaches in understanding human behavior, including self-concept, social role theories, and rational-behavioral approaches, will also be examined. *Prep. 53.804 Counseling Theory and Process. (This prerequisite is waived for Rehabilitation Administration majors.)*

### **53.816 Psychological Counseling Strategies**

Focuses on a variety of strategies designed to alleviate problems of older adolescents and adults. Perceptual-Gestalt insight approaches and behavioral approaches to counseling will be analyzed for their effectiveness with a variety of psychological problems. The context for considering this eclectic approach to psychological counseling will be communications theory and organizational psychology, with the latter being related to the effective delivery of counseling and mental health services. *Prep. 53.804 Counseling Theory and Process. This course is primarily intended for the student working with client populations in mental health settings and college counseling centers.*

### **53.818 Case Studies in Marriage and Family Counseling**

An advanced-level course for students with previous experience or preparation in marriage and family counseling. Skills to be emphasized will include 1) the preparation of case studies of family and marriage histories and current functioning; 2) the design of service, counseling, and referral programs based upon comprehensive studies of needs and resources; and 3) the practice of counseling strategies through role playing, taped interviews, and progress reports of current counseling activities. *Prep. 53.811 Family and Parent Counseling.*

### **53.820 Seminar in School Psychology**

This course provides an intensive analysis of philosophical, technical, and school administrative issues contributing to the professional identity and function of the psychologist in an educational milieu. Simulations, case studies, and research projects will be used to study these issues. *Prep. permission of instructor.*

### **53.821 Psycho-Educational Prescriptions**

This course will deal with methods of synthesizing psychological information into effective, individually appropriate educational plans. Specific applications of methods from previous courses will be discussed. *Prep. permission of instructor.*

### **53.824 Individual Intelligence Testing**

(6 quarter hours)

Preparation to administer, score, and interpret the Stanford-Binet Intelligence Test, the Wechsler Adult Intelligence Test, and the Wechsler Intelligence Scale for Children. Consideration will be given to the theories of intelligence upon which the tests are based and the use of the tests in educational and clinic settings. Students will be required to administer and score thirty tests, including some from each of the three tests included in the course. *Prep. 53.801 Tests and Test Procedures or permission of instructor.*

### **53.831 Advanced Group Counseling**

This course will be a continuation of the content presented in Group Counseling,

placing greater emphasis on developing skill in conducting group counseling at a variety of age levels. Greater attention will be given to relevant readings and research on group process and methods for behavior modification. *Prep. 53.808 Group Counseling or permission of instructor.*

### **53.833 Seminar in Counseling Supervision and In-Service Education**

Supervisory methods of improving the effectiveness of school counselors' skills in counseling and other aspects of guidance work, of involving counselors in the improvement of the guidance program, and of enhancing the personal growth of the counselor. *Prep. master's degree in guidance or permission of the instructor.*

### **53.834 Advanced Theories of Behavior Change**

An advanced-level counseling course required of all CAGS students and designed to provide greater depth of cognitive understanding of a variety of approaches to counseling. Original readings from a number of major theorists will be required. A major goal of the course will be to identify the major similarities and differences of assumptions, goals, and strategies of the theorists studied, and to build a strong conceptual basis for a counseling eclecticism from this analysis. Some of the theorists studied will include Freud, Adler, Perls, Ellis, Glasser, Rogers, Sullivan, May, Frankl, Bandura, and Skinner. *Prep. at least two counseling courses emphasizing both theory and process.*

### **53.835 Psychodiagnostic Measures**

An advanced-level course in the use and interpretation of interest and personality measures for more clinically-oriented settings. The course will place heavy emphasis on the case study method. Some of the tests typically studied in this course may include the Minnesota Multiphasic Personality Inventory, the California Psychological Inventory, Edwards Personal Preference Schedule, the Semantic Differential, and various interest measures. The course will introduce the student to projective techniques, beginning with the sentence completion test. *Prep. 53.801 Tests and Test Procedures, Abnormal Psychology or Personality Theory, and permission of instructor.*

### **53.836 Systems Approach to the Development of Human Services**

Concepts and techniques of systems analysis will be applied to the development, management, delivery, and evaluation of human services in schools, colleges, and mental health and rehabilitation systems. Students will be taught the skills of analysis and synthesis of problems, writing goals and objectives, PERT charting, and flowcharting. These skills will be applied to problems of the student's choosing. This course stresses applications of systems techniques rather than systems theory. Only those concepts necessary to the understanding of the skills will be emphasized.

### **53.840-841 Advanced Field Work**

(8 quarter hours)

Required of all CAGS students. The student will be assigned a field work placement consistent with his major professional goal and/or the setting in which he intends to work. The activity of the field work will extend across the academic

year from September to June and require a minimum of one and a half days per week, or the equivalent, in the field work setting. Seminars will meet on alternate weeks with additional individual supervision on campus. Supervision will also be provided in the field setting. Both quarters must be completed before credit will be given for the course. *Prep. Counseling Practicum or the equivalent in experience.*

#### **53.843-844 School Psychology Field Work** (8 quarter hours)

Required of all CAGS School Psychology majors. The student will be assigned a field work placement in a K-12 school system under the supervision of a certified school psychologist. The activity of the field work will extend across the academic year from September until June. The student will be required to put in a minimum of one and a half days (300 hours) in the field work setting during the school year. Seminars will meet regularly on campus with additional university faculty supervision. *Prep. School Psychology Practicum.*

#### **53.891 Thesis**

A research activity that may be elected by the student in lieu of two courses (8 quarter hours), with the approval and recommendation of the adviser.

#### **53.893 Doctoral Dissertation** (8 quarter hours)

*Prep. admission to candidacy in the Doctor of Education degree program.*

#### **53.895 Institute in Counselor Education**

(See general institute description on page 125.)

#### **53.898 Workshop in Counselor Education**

(See general workshop description on page 126.)

#### **53.899 Directed Study**

This experience is provided for the student whose unique academic needs or interests cannot be adequately satisfied in any of the scheduled courses of the Department. *Prep. approval of the chairman of the Department and of the director of the Graduate School of Education. (Approval forms must be submitted during the quarter prior to registration for the Directed Study.)*

## **SPEECH PATHOLOGY AND AUDIOLOGY**

#### **55.803 Cerebral Palsy**

Neuromuscular involvements and concomitant language and speech disorders; intellectual deficits, psychological deviations, communicative disorders of a cerebral palsied population; testing, placement, and management of the cerebral palsied child and adult with emphasis on a multidisciplinary approach.

#### **55.804 Aphasia**

Emphasis on clinical analysis of aphasic verbal behavior, physiology and pathology of aphasia, review of literature, and a brief review of current attitudes concerning therapy.

**55.805 Seminar: Voice Disorders**

Physiology and neurology of the laryngeal mechanism; the laryngoscopic examination. Voice disorders as learned behavior as a result of organic, neurological, and psychological deviation. Evaluation, referral, and management.

**55.806 Language Disturbances in Children**

Minimal cerebral dysfunction and its effect on language acquisition and use in the communicatively disturbed child; behavioral patterns of the nonverbal child; concepts of delayed development of language; evaluation and management.

**55.811 Clinical Management in Stuttering**

This course will emphasize diagnostic techniques, a review of the current therapeutic approaches, consideration of the individual's needs in therapy, and the process of behavioral and attitudinal change. Also to be considered are termination, referral, and group therapy.

**55.812 Differential Diagnosis in Speech and Language Pathology**

Evaluation, interpretation, and integration of test results; the application of standard psychological tests to speech and hearing disorders; analysis of patients' premorbid and morbid histories, medical and psychological diagnoses; design and execution of therapeutic procedures; proper referral techniques and report writing; practicum situation. *Prep. 55.816 Test Procedures in Speech and Language or permission of instructor.*

**55.813 Advanced Clinical Practice**

(8 quarter hours)

Supervised clinical practicum in speech pathology and audiology in the North-eastern University Speech and Hearing Clinic and medical settings, educational settings, and rehabilitation centers. A minimum of 150 clock hours of experience with patients to extend over a three-quarter time period is required. An "I" grade will be awarded until all the requirements are met and then a pass-fail grade will be awarded. *Prep. 50 clock hours of clinical experience and permission of the clinical staff.*

**55.814 Clinical Audiometry I**

The use of pure tone and speech reception instrumentation and hearing aid evaluation; the results and interpretation in the diagnosis of functional and organic disorders. Lectures, demonstration, observations, and practicum. *Prep. Introduction to Audiology and consent of instructor.*

**55.815 Clinical Audiology**

The process of identification and evaluation of hearing loss. Differential diagnosis. Tests for conductive, sensorineural, and retrocochlear involvements. A consideration of research findings in the area of hearing aid selection, auditory training, lip reading, and language training for hearing handicapped individuals. *Prep. Introduction to Audiology (see undergraduate Education catalog).*

**55.816 Test Procedures in Speech and Language Pathology**

Procedures in evaluating organic and functional communication disorders using

standard and nonstandard speech and language tests in University clinic situations. Demonstration and application of techniques and objective reporting.

### **55.817 Advanced Anatomy, Neurology, and Physiology of Speech-Hearing Mechanism**

Lectures and demonstrations by medical personnel. Emphasis on the head and neck. Admission by consent of adviser and medical supervisor. For advanced standing students. *Prep. Anatomy, Neurology, and Physiology of Speech and Hearing I; Introduction to Audiology; and Pathologies of the Ear.*

### **55.818 Pathologies of the Ear**

Lectures and observations in the organic and neurological pathologies of the ear; i.e., otitis media, Meniere's disease, and otosclerosis. Consideration of approaches to treatment (medical setting).

### **55.819 Clinical Audiometry II**

Specialized techniques (Bekesy, FGSR, EEG, group testing, and screening); the results and interpretation in the diagnosis of functional and organic hearing disorders. *Prep. Introduction to Audiology and Audiometry I, lectures, demonstration, observations, and practicum.*

### **55.820 Physiological Acoustics**

Particular emphasis is placed on the biophysics of the hearing mechanism, especially in terms of actual clinical utility. Comparative anatomy and physiological analysis and dissections will accompany many of the class lectures. *Prep. introductory courses in Speech and Hearing, 55.815 Clinical Audiology.*

### **55.821 Seminar in Audiology**

Advanced study of the rationale and development of principles associated with special procedures and methods used in audiology.

### **55.822 Seminar in Oro-Facial Anomalies**

Course material will be presented via lectures, class discussions, and frequent visits to and participation in several plastic surgery clinics. Guest lecturers in the areas of plastic surgery, genetic counseling, and otolaryngology will be invited to participate in the course. Major content areas will be embryology, etiology, cleft lip and palate, and other syndrome classifications; speech and language considerations; surgical, dental, and otologic considerations; psychological and social considerations; and an analysis of the total team habilitative effort. *Prep. Anatomy and Physiology of the Speech Mechanism.*

### **55.823 Psycho-Social Aspects of Communication Disorders**

This course is concerned with the psychological and social aspects of organic and nonorganic communication disorders. It will include personality dynamics in aphasia, cleft palate, cerebral palsy, deafness, and other primarily organic disorders, and psychogenically motivated disorders such as stuttering, language, and articulation.



**55.824 Seminar in Speech Pathology**

Individual research and/or critical review of the literature in some area of basic science, speech sound learning, language, voice, fluency, or multiple disorders. Class presentations of material and class discussion will be included. *Prep. open to graduate students who have completed the equivalent of two quarters of graduate work in Speech Pathology and who have permission of the instructor.*

**55.860 Aphasia Rehabilitation**

Emphasis on current attitudes toward therapy and new methods, clinical methods of evaluation which are preparatory to therapy, observation of therapeutic methods, and supervised clinical practice at the Veterans Administration Hospital. *Prep. 55.804 Seminar: Aphasia, or an acceptable equivalent.*

**55.861 Neuropathology**

The intricacies of neurological disease. Application of functional neuroanatomy in comprehending the various disease processes involving the nervous system. Derangements of speech with a neurological basis; an understanding of the disease process in relation to the diagnosis and treatment of patients with neurological diseases: cerebrovascular disease tumors or malformations, Parkinson's disease, multiple sclerosis, and others. Case presentations, neuroanatomy, laboratory experience, and analysis in the hospital environment. *Prep. permission of instructor.*

**55.862 Psycho-Acoustics**

Particular emphasis will be placed on masking, frequency vs. intensity relationships, evoked response procedures, brief tone and temporal integration, binaural summation, impedance foundations, and general behavioral responses to sound stimuli. *Prep. Introduction to Speech and Hearing, 55.815 Clinical Audiology, 55.820 Physiological Acoustics.*

**55.863 Advanced Study in Articulation Disorders**

An exploration into advanced theories of normal and abnormal phonological development with emphasis on distinctive feature theory and phoneme theory; direct application of theories to diagnosis and treatment of various phonological disorders.

**55.864 Parent Education in Communication Disorders**

This course is designed to develop the student's understanding of the role of the parent in the therapeutic process. Content of the course includes various approaches to parent education, including group therapy, client-centered counseling, and filial therapy. *Prep. 55.823 Psycho-Social Aspects of Communication Disorders.*

**55.865 Seminar: Speech Science**

Major topics will include the physics of sound generation and modification via the vocal tract, the biophysiology of respiration for phonatory processes, electromyographic techniques and biopotential recording systems, laryngeal and articulatory function, coupling, nasality, and X-ray procedures (head plate analysis).

Neural innervation and vascular supply will be considered in conjunction with each muscle discussed. *Prep. course in speech science and 55.817 Advanced Anatomy or equivalent.*

#### **55.866 Hearing Science Seminar**

Individual research and/or critical review of the literature in the areas of bone conduction of auditory signals, evoked response and audiometry, impedance and audiometry, cortical processing of auditory input, and other related topics. Students will be responsible for class presentations of researched material.

#### **55.891 Thesis**

A research activity that may be elected by the student in lieu of two courses (8 quarter hours), with the approval and recommendation of the adviser.

#### **55.895 Institute of Speech Pathology and Audiology**

(See general institute description on page 125.)

#### **55.898 Workshop in Speech Pathology and Audiology**

(See general workshop description on page 126.)

#### **55.899 Directed Study**

This experience is provided for the student whose unique academic needs or interests cannot be adequately satisfied in any of the scheduled courses of the Department. *Prep. approval of the chairman of the Department and of the director of the Graduate School of Education. (Approval forms must be submitted during the quarter prior to registration for the Directed Study.)*

*Teaching the Deaf  
(Will not be offered 1975-76.)*

#### **55.825 Teaching Speech to Deaf Children**

Utilization of vibration, visual aids, kinesthetic and proprioceptive cues, residual hearing and imitation in combination, to elicit intelligible speech from the deaf.

#### **55.826 Teaching Language and Reading to Deaf Children**

Modern methods in use, such as the Fitzgerald Key and the Natural Language Approach. Emphasis on how to use language in natural situations through lip reading and writing, with later emphasis on the formal presentation of language principles.

Methods used to develop reading experiences that focus on content rather than mechanics. Development of a balanced reading program that will provide adequate motivation, provision for evaluation, a wide variety of rich materials, and a well-organized sequence of reading experiences.

#### **55.827 Methods and Materials in Deaf Education**

Special methodologies in teaching the deaf. A wide view of the field and a comprehensive consideration of methods and materials. Emphasis placed on how to provide concrete experiences and activities, trips, and demonstrations to assist

the child in understanding. There will also be demonstrations in the use of visual and auditory aids.

### **55.828 Aural Rehabilitation**

Various speechreading methods, auditory training techniques, and materials. An integrated approach to the treatment of the hearing handicapped.

### **55.852 Practicum: Teaching of the Deaf**

(8 quarter hours)

An opportunity for observing and teaching deaf children at various levels, under regular supervision in the Beverly School for the Deaf.

## **REHABILITATION ADMINISTRATION AND SPECIAL EDUCATION**

### *Rehabilitation Administration*

#### **56.950 Introduction to Rehabilitation**

An overview of and orientation to the field of rehabilitation, including its historical development, legislative involvement, psychological implications, and sociological dimensions. Emphasis is placed on coordinating and integrating services as they relate to the field of rehabilitation as a community process.

#### **56.951 Principles of Medical Rehabilitation**

The wide spectrum of disabilities that could profit from rehabilitation, including orthopedic, neurological, medical, surgical, and mental disabilities. Basic principles of medical rehabilitation important for the administrator to know will be presented. Psychological aspects of disability will also be discussed.

#### **56.952 Rehabilitation and Social Services**

The use of vocational rehabilitation as an effective rehabilitation process in federal, state, and private agencies as supported and encouraged by the most recent social and rehabilitation services legislation. This will include use of the rehabilitation model in programs for the physically handicapped, mentally retarded, emotionally disturbed, aging, welfare populations, youthful offenders, culturally disadvantaged, and other special community programs. There will be emphasis on the administrative involvement in developing and supporting the diagnostic, evaluative, counseling, and placement procedures used in such rehabilitative programs.

#### **56.953 Organization and Administrative Theory**

The body of conceptual knowledge regarding organizational and administrative theory will be examined. Formal and informal organizations, organizations as social systems, status and role concepts, leadership in organizations, power structure, relationships to authority, decision making, and communication in and between organizations. An organizational analysis will be made of all the different types of rehabilitation settings currently in use.

#### **56.956 Community Planning in Rehabilitation**

What the administrator needs to know about community planning to plan a

program in his area. Basic principles of community planning, community organization, and community dynamics, as well as interdisciplinary relations in rehabilitation. Examples of community planning from different rehabilitation agencies and the referral process among these agencies will be studied.

#### **56.957 Federal-State Relations in Rehabilitation**

The complex network of federal-state relations and their implications for rehabilitation. Grant procedures, matching formulas, public relations and VRA directives, state and federal legislation pertinent to rehabilitation.

#### **56.958 Social Welfare and Rehabilitation**

Acquainting rehabilitation administrators with the broad field of social welfare. The course will review the historical backgrounds of the relationship between vocational rehabilitation and social welfare and the more recent fast-moving developments in the relationship of these fields.

#### **56.959 Rehabilitation Research**

The emphasis in this course will be on administrative research, program evaluation, grantsmanship, etc. In addition, students will have the opportunity to develop a research design on some aspect of rehabilitation administration and carry out the necessary research operations involved.

#### **56.960 Practicum in Rehabilitation Administration** (8 quarter hours)

Students will be assigned to a variety of rehabilitation agencies for their practicum experience. Problem solving relevant to experiences encountered in internship. A seminar will be regularly conducted by a senior faculty member in conjunction with the practicum experience. This seminar will enable students to share their field work experiences and resolve problems in rehabilitation administration which are connected with their field placements. (Students are expected to be available one-half day in the Fall Quarter and two days in the Winter, Spring, and Summer Quarters.)

#### **56.961 Rehabilitation Administration I**

An in-depth study of management practices within a rehabilitation organization from a behavioral standpoint. Areas to be covered include need surveys, goal-setting practices, job descriptions, recruitment, staffing, training, professional development, caseload management, program planning, utilization of research, community relations, leadership patterns, performance appraisal, and external relationships. Special cases will be used in classroom exercises.

#### **56.962 Administration of a Sheltered Workshop**

Special problems of administering a sheltered workshop, such as community planning, work evaluation, job-training, labor relations, contracting, production, and occupational placement.

#### **56.963 Rehabilitation Administration II**

Understanding the fiscal management of the typical rehabilitation setting, including basic rehabilitation agency accounting, planned program budgeting, dis-

bursements, cost-analysis, contracting, taxation, forecasting, and funding. The implication of data processing for fiscal management will be covered in the course. Special problems will be assigned during the course.

#### **56.964 Rehabilitation and the Law**

This course is designed to sensitize rehabilitation administrators to the impact of legislative developments upon the field of rehabilitation. Special emphasis will be placed on understanding the legal implications for rehabilitation of the latest Vocational Rehabilitation Administrative Amendments, workmen's compensation laws, eligibility determination criteria, and Social Security Amendments.

#### **56.965 Occupational Placement**

A study of the dynamics of moving the rehabilitation client into the world of work within the framework of the specific community structure. Development of facility in use of resource materials in occupational information, job description and analysis, performance appraisal, training, and vocational assessment. The personnel point of view toward the handicapped will be discussed and analyzed, and more effective placement practices will be developed.

#### **56.980 Psychological Problems of Disability**

In-depth study of the disabled, from the viewpoint of psychosocial factors, interpersonal relationships, and cognitive versus noncognitive functioning in those with motor and sensory disabilities; problems of dependency and motivation.

#### **56.981 Administrative Problems in Rehabilitation**

Seminar designed to analyze, in depth, critical issues and selected rehabilitation problems. Operations and systems research as applied to rehabilitation will be highlighted. Students will make use of institute research studies and studies available through Social and Rehabilitation Services, completed research, and demonstration projects.

#### **56.982 Essentials of Case Management and Supervision**

The relationship between case management and casework supervision will be explored. Topics covered will be dynamics of the communication process, decision making, conflict, resolution and compliance, management of resources external to the organization, and structural and functional analysis of supervisory process. Management of case load.

#### **56.983 Rehabilitation of the Alcoholic and Drug Dependent**

A study of comprehensive factors, including the nature of etiology dynamics involved in alcoholic and drug dependency; techniques for evaluation; rehabilitation administration, planning, and treatment.

#### **56.984 Rehabilitation of the Penal Offender**

The rehabilitation of the penal offender will be examined from an eclectic point of view. Psychodynamic elements will be stressed, as well as social factors in the etiology, evaluation, treatment and rehabilitation seminar planning and administration.

**56.985 Rehabilitation of the Geriatric**

This course will present a comprehensive treatment of the problems, dimensions, and parameters involved in the administration of the various services and facilities for the rehabilitation of the geriatric. Special emphasis will be placed on the rehabilitation philosophy versus disengagement.

**56.986 Critical Issues in Rehabilitation Administration**

This course will be built around the exploration and in-depth discussion of current issues which are highly problematical to the field. Among these issues are the breadth of the concept of disability, appropriate training sequences for the various rehabilitation disciplines, the resolution of conflict over role overlap among disciplines, appropriate models for service delivery systems, etc. The most current and relevant research will be brought to bear upon these areas, as well as knowledge from the reservoir of experience of instructors, visiting experts, and the student participants themselves. Students will be prepared to cope with these issues as they exist in the profession and in the community. A theoretical orientation frame of reference will be brought to bear upon problems wherever feasible.

**56.991 Thesis**

A research activity that may be elected by the student in lieu of two electives (8 quarter hours), with the approval and recommendation of the adviser.

**56.993 Doctoral Dissertation**

*Prep. admission to candidacy in the Doctor of Education degree program.*

**56.995 Institute in Rehabilitation Administration**

(See general institute description on page 125.)

**56.998 Workshop in Rehabilitation Administration**

(See general workshop description on page 126.)

**56.999 Directed Study**

This experience is provided for the student whose unique academic needs or interests cannot be adequately satisfied in any of the scheduled courses of the Department. *Prep. approval of the chairman of the Department and of the director of the Graduate School of Education. (Approval forms must be submitted during the quarter prior to registration for the Directed Study.)*

*Special Education*

(For sequence requirements refer to Fields of Study)

**56.801 Alternatives for Providing Services for Special Needs Children**

A course for those involved in the regular classroom, special education, pupil personnel, and administration. Models will be provided for decision making and program evaluation with reference to appropriate research. The consultative role of the special educator will be defined and developed. There will be interaction

with members of varied and allied disciplines who provide services for special needs children.

### **56.807 Learning Disabilities**

This course surveys behavioral characteristics of children who present specific deficits in perceptual, integrative, or expressive processes which impair learning efficiency. Discussion of diagnostic techniques, curriculum materials, and teaching methods will be combined with observation.

### **56.831 Teaching the Emotionally Disturbed**

A study of approaches used to deal with behavioral disorders. Emphasis will be on classroom management techniques, use of consultation, and parent-teacher interaction.

### **56.832 Group Dynamics**

Emphasis on understanding group growth, behavior, and action fundamental to developing solutions to the complex problems of group life. Students will learn to examine their strengths and weaknesses, to make decisions, to become alert to new ideas and actions, to discover the pulse of a group, and analyze reasons for being productive while another group may be nonproductive. The group will examine such areas as sociodrama, sociometric techniques, attitude testing, social action project development, and communication blocks in human relations.

### **56.833 Mental Health**

A study of conditions leading to optimal social adjustment. Consideration of the relationship between the maturation process and mental health, possible pre-determinants of maladjustment, and factors which encourage the attainment of emotional maturity. Special emphasis will be paid to the role of the school. Contributions from the fields of psychiatry, psychology, sociology, physiology, and medicine will be synthesized and evaluated.

### **56.834 Case Conferences on Emotionally Disturbed Children**

This course will be conducted as a seminar in connection with the student's practicum. Case presentations by outstanding resource persons will be thoroughly examined and discussed. Students will also be expected to make their case presentations to the seminar. *Prep. 50.807 Abnormal Psychology, 56.831 Teaching the Emotionally Disturbed.*

### **56.835 Socio- and Psychodynamics of Family Life**

A consideration will be given to the internal and external dynamics of family life and the significance of such dynamics to the mental health of the handicapped child. Approaches to working with parents are explored.

### **56.837 Seminar: Problems of the Emotionally Disturbed Child**

This course will be devoted to an intensive study of the special problems of the emotionally disturbed child. It will provide an opportunity to proceed in depth in areas of special interest to the seminar students. Special attention will be paid to problems presented by the autistic child, the neurotic child, the child with

character disorders, the child with psychosomatic disorders, and the multi-handicapped child. *Prep. 56.880-881 Etiology and Development of Deviations in Special Needs Individuals.*

### **56.838 Development and Implementation of Programs for the Severely Handicapped**

Course work will include observation of severely handicapped children in the classroom, demonstration of evaluation and assessment techniques, and development of educational plans for a severely handicapped child. *Prep. 56.840 Psychology of Mental Retardation and Other Handicapping Conditions, 56.846-847 Special Education Methods and Materials Related to Measurement and Evaluation (may be taken concurrently).*

### **56.839 The Multiply Handicapped**

A review of handicapping conditions and consideration of the educational implications of multiple handicaps. Tutoring a child with two or more handicaps; consulting with agencies and school personnel will be among projects assigned. *Prep. either 56.880 Etiology and Development of Deviations in Special Needs Individuals or 56.840 Psychology of Mental Retardation and Other Handicapping Conditions, or permission of the instructor.*

### **56.840 Psychology of Mental Retardation and Other Handicapping Conditions**

A study of the social and emotional adjustment of handicapped children and of the psychological significance of mental, sensory, and motor variations in the adjustive process. The effects of limitations imposed by attitudes of society, the attitude of the individual toward his handicap, and the effect of the handicap itself are evaluated. Implications for educational programs are analyzed. (This course should be among the first taken in the Special Education sequence.)

### **56.841 Development and Implementation of Programs for the Moderately Handicapped**

Development and implementation of programs for the moderately handicapped will be discussed; classroom observation of moderately handicapped children, demonstration of evaluation and assessment techniques, and development of educational plans for one or more moderately handicapped children will be projects for the course. *Prep. 56.840 Psychology of Mental Retardation and Other Handicapping Conditions, 56.846-847 Special Education Methods and Materials Related to Measurement and Evaluation (may be taken concurrently).*

### **56.843 Vocational Development — Evaluation and Education of the Vocationally Handicapped**

Designed to develop fundamental skills in the evaluation and teaching of activities related to the vocational development of disabled individuals. Work sample and other techniques will be used to assess levels of skills. Focus will be on activities such as home management, use of tools, household repairs, basic sewing, essentials of food preparation, and activities of daily living (ADL). Visits will be made to sheltered workshops and vocational adjustment centers.



**56.845 Rehabilitation and the Special Education Teacher**

The course is designed to develop effective working relationships between rehabilitation professionals and special education teachers. Elementary and secondary school personnel concerned with children with special needs will also find the course pertinent. Consideration will be given to current legislation (Massachusetts Chapter 766) and its implementation, the teacher's role in rehabilitation, an understanding of the total rehabilitation process, and rehabilitation resources available to school personnel.

**56.846-847 Special Education Methods and Materials Related to  
Measurement and Evaluation** (8 quarter hours)

Competencies will be developed in the following areas: observation; recording and analysis of children's behavior and learning environments, including continuous measurement and informal assessment of specific, general, and behavioral learning needs; development and implementation of individualized educational plans, including task analysis, adaptation, and selection of materials, and strategies in applied behavior analysis; precision teaching; contingency management and other classroom management and instructional techniques; techniques of formal assessment of specific, general, and behavioral learning needs; development and implementation of individualized educational plans, including task analysis, adaptation and selection of materials and strategies in language arts, mathematics, and perceptual-motor skills. Students will be expected to arrange to work with children with special needs on a voluntary basis in order to develop the skills outlined above.

**56.848 Preschool Learning Problems — Identification and Program  
Development**

Informal and formal screening and assessment procedures suitable for the preschool population will be evaluated. Students will be required to work with preschool children in order to acquire experience with screening and assessment techniques. The resulting information will then be used to develop programs to meet the needs of individual children.

**56.849 Special Education for Gifted Children**

Identification, characteristics, and problems of gifted, creative, and talented children and youth. Emphasis on administrative and instructional adjustments needed to provide for this group of exceptional children.

**56.850 Field Work and Seminar with Special Needs Children**
**56.851 Student Teaching and Seminar with Special Needs  
Children** (4 quarter hours each)

Courses designed to satisfy present Massachusetts requirements for teaching children with special needs.

The courses extend over a full year in a series of experiences as observer, tutor, and teacher. Students must make available approximately 250 hours or two days per week for two quarters for field work, and approximately another 250 hours or four days per week for one quarter for student teaching. Students who are

employed and who cannot devote full days to satisfy these requirements must arrange to be available evenings, weekends, and summers. Provision for attendance at biweekly seminars must also be made. Seminars are for the purpose of discussing with other students and professors issues in teaching special needs children, which arise in the field. Outside speakers and programs will be arranged to extend this dialogue.

Students who are certified, have a Letter of Approval, or are eligible for the latter from the Massachusetts State Department of Education as a Special Needs teacher may not be required to student teach. Student teaching in another area of special needs or an appropriate elective course may be substituted with the written approval of the student's academic adviser.

Approval of the academic adviser, in writing, will be required before the student can do field placement or student teaching. Approval, in writing, of the academic adviser will be required prior to obtaining a waiver of student teaching.

All students, regardless of past experience, certifications, or letters of approval, will do approximately 250 hours of field work set up and supervised by the University.

#### **56.853 Field Work and Seminar**

#### **56.854 Practicum in Special Education** (4 quarter hours each)

Courses designed to satisfy Department requirements for field experience and extended practicum for SECP or other students who do not need certification. The courses extend over a full year and cover a series of experiences. Students must make available a minimum of two days per week for the first two quarters and five full days per week for the third quarter. Application for field placement is made two quarters prior to that for which field work is planned. Part-time students who are employed will need to make provision for evening, weekend, or summer assignments to satisfy the requirement for field experience, and a full quarter of field work, five days per week. Provision for attendance at seminars must also be made.

#### **56.870 Administration and Supervision of Special Education**

Designed for advanced graduate students preparing for administrative or supervisory positions in special education programs. Facilities and curriculum adjustments, staff roles, methods and content for in-service training, and the use of the team approach are studied. Field trips to observe and evaluate programs are required. *Prep. 52.810, 52.811 Leadership in Education I & II.*

#### **56.880-881 Etiology and Development of Deviations in Special Needs Individuals**

(8 quarter hours)

The first quarter (56.880) will concentrate on factors which primarily affect deviations in cognitive, motoric, and physical development. Understanding of these factors will be used to discuss multidisciplinary life-management issues relating to Down's Syndrome, cerebral palsy, and other common conditions.

The second quarter (56.881) will concentrate on factors which primarily affect emotional development. Psychobiological, psychodynamic, and learning theory approaches will be discussed and related to problems of life-span management.

Community programs will be analyzed in addition to the more traditional intervention techniques.

**56.882 Seminar in Mental Retardation**

A study of research in the field and its implications for teaching. Intervention strategies will be studied and evaluated.

**56.891 Thesis**

A research activity that may be elected by the student in lieu of two courses (8 quarter hours), with the approval and recommendation of the adviser.

**56.893 Doctoral Dissertation**

*Prep. admission to candidacy in the Doctor of Education degree program.*

**56.895 Institute in Special Education**

(See general institute description on page 125.)

**56.898 Workshop in Special Education**

(See general workshop description on page 126.)

**56.899 Directed Study**

This experience is provided for the student whose unique academic needs or interests cannot be adequately satisfied in any of the scheduled courses of the Department. *Prep. approval of the chairman of the Department and of the director of the Graduate School of Education. (Approval forms must be submitted during the quarter prior to registration for the Directed Study.)*

## INSTITUTES

**50.895, 51.895, 51.896, 52.895, 53.895, 56.895, 56.995**

A department may offer a special institute in a specific field of interest from time to time. The institute may be a collaborative one offered by the several departments in the College of Education and will usually include a special institute faculty drawn from resources outside the University, as well as from the College of Education faculty. The institute will focus on a specific area of academic study and may be interdisciplinary in nature; it involves total time commitments on the part of participants in morning, afternoon, and evening sessions five or six days per week for one to eight weeks, depending upon the nature and scope of the institute. Institutes are customarily designed for participants who are currently employed in a common field of work and who are desirous of receiving additional preparation in new methods, new materials, and new content areas. Graduate credit will be granted for successful completion of an institute but may not be applied toward a degree program at the University without the approval of the department in which the student is doing his major field of specialization degree work. All institute participants must be degree candidates in the Graduate School of Education or must qualify, prior to registration, as special graduate students. *Prep. permission of institute instructor.*

**WORKSHOPS****50.898, 51.897, 51.898, 52.898, 53.898, 56.898, 56.998**

A department may offer a special workshop in a specific field of interest from time to time. Emphasis in the workshop will be focused on development of instructional materials or resolution of practical problems within a single school or institutional setting, or for a group of potential workshop participants who are currently employed in a common field of work. Graduate credit will be granted for successful completion of a workshop but may not be applied toward a degree program at the University without the approval of the department in which the student is doing his major field of specialization degree work. All workshop participants must be degree candidates in the Graduate School of Education or must qualify, prior to registration, as special graduate students. *Prep. permission of workshop instructor.*

**DEPARTMENTAL DIRECTORY**

|                                | <b>Office</b> | <b>Telephone Number</b> |
|--------------------------------|---------------|-------------------------|
| Bureau of Field Services       | 118 CU        | 437-3297                |
| Counselor Education            | 405 CU        | 437-3276                |
| Curriculum and Instruction     | 227 CU        | 437-3302                |
| Director of Field Placement    | 96 CA         | 437-3280                |
| Educational Administration     | 82 CA         | 437-3286                |
| Foundations of Education       | 306 CU        | 437-3282                |
| Graduate School of Education   | 118 CU        | 437-2708                |
| Rehabilitation Administration  | 232 UR        | 437-2485                |
| Special Education              | 232 UR        | 437-2485                |
| Speech Pathology and Audiology | 133 FR        | 437-2493                |

**UNDERGRADUATE COLLEGES**

*Offering full-time day curricula on the Cooperative Plan leading to baccalaureate degrees*

|                                    |                                |
|------------------------------------|--------------------------------|
| Boston-Bouvé College               | College of Liberal Arts        |
| College of Business Administration | College of Nursing             |
| College of Criminal Justice        | College of Pharmacy and Allied |
| College of Education               | Health Professions             |
| College of Engineering             | Lincoln College                |

*Offering part-time curricula during late afternoon and evening hours leading to associate and baccalaureate degrees*

Lincoln College  
University College

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**NORTHEASTERN UNIVERSITY 1975-76  
GRADUATE PROGRAM IN CRIMINAL JUSTICE**





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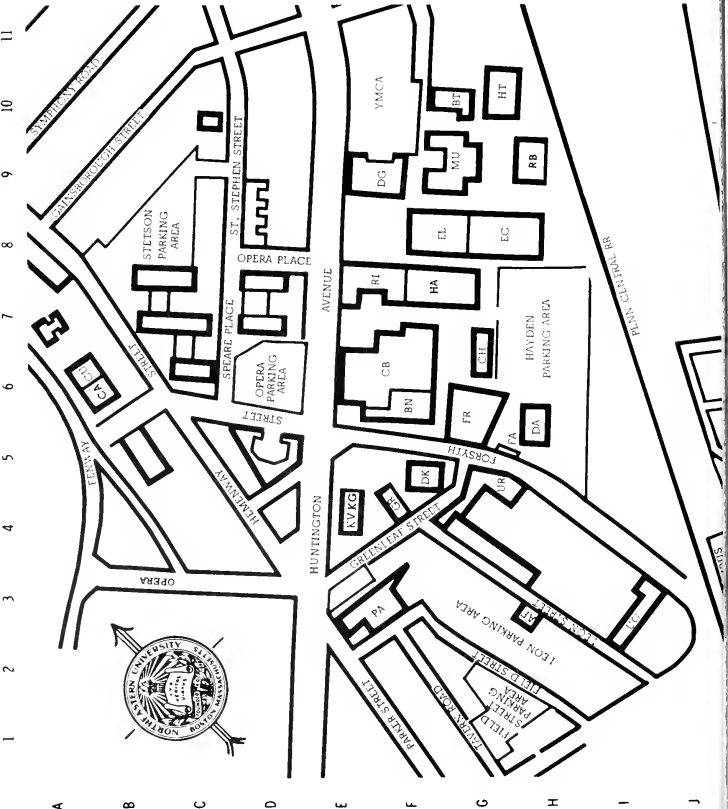
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- E7
- H9
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| Building                                 | Building Designation |
|--|----------------------|
| Barletta Natatorium                      | BN                   |
| Botolph Building                         | BT                   |
| Cabot Physical Education Ctr.            | CB                   |
| Churchill Hall                           | CH                   |
| Cushing Hall                             | CU                   |
| Dana Research Center                     | DA                   |
| Dockser Hall                             | DK                   |
| Dodge Library                            | DG                   |
| Eli Student Center and Alumni Auditorium | EL                   |
| Forsyth Building                         | FR                   |
| Forsyth Building Annex                   | FA                   |
| Greenleaf Building                       | GR                   |
| Hayden Hall                              | HA                   |
| Hurtig Hall                              | HT                   |
| Cahners Hall                             | CA                   |
| Knowles Center (Volpe)                   | KV                   |
| Knowles Center (Gryzmish)                | KG                   |
| 11 Leon Street                           | UO                   |
| African-American Institute               | AF                   |
| Mugar Life Sciences Building             | MU                   |
| Parker Building                          | PA                   |
| Richards Hall                            | RI                   |
| Robinson Hall                            | RB                   |
| United Realty Building                   | UR                   |

**ACADEMIC CALENDAR 1975-1976**

**Fall Quarter 1975**

|  |                 |                   |
|--|-----------------|-------------------|
| Registration period (1:00-3:00 and 5:30-8:00 p.m.) |                 |                   |
| Boston   | Monday-Thursday | Sept. 22-Sept. 25 |
| Classes begin                                      | Monday          | September 29      |
| Last day to drop a course                          | Wednesday       | November 26       |
| Examination period                                 | Monday-Friday   | Dec. 15-Dec. 19   |

**Winter Quarter 1975-1976**

|  |                 |                 |
|--|-----------------|-----------------|
| Registration period (1:00-3:00 and 5:30-8:00 p.m.) |                 |                 |
| Boston   | Monday-Thursday | Dec. 8-Dec. 11  |
| Classes begin                                      | Monday          | January 5       |
| Last day to drop a course                          | Friday          | March 5         |
| Examination period                                 | Monday-Friday   | Mar. 22-Mar. 26 |

**Spring Quarter 1976**

|  |                 |                 |
|--|-----------------|-----------------|
| Registration period (1:00-3:00 and 5:30-8:00 p.m.) |                 |                 |
| Boston   | Monday-Thursday | Mar. 15-Mar. 18 |
| Classes begin                                      | Monday          | April 5         |
| Last day to drop a course                          | Friday          | June 4          |
| Examination period                                 | Monday-Friday   | June 14         |

**Summer Quarter 1976**

|                                      |                      |              |
|--------------------------------------|----------------------|--------------|
| Registration period (5:30-8:00 p.m.) |                      |              |
| Boston                               | Wednesday & Thursday | June 16 & 17 |
| Classes begin                        | Monday               | June 28      |

**UNIVERSITY HOLIDAYS 1975-1976**

|                               |                   |                 |
|-------------------------------|-------------------|-----------------|
| Columbus Day                  | Monday            | October 13      |
| Veterans' Day                 | Monday            | October 27      |
| Thanksgiving Recess           | Thursday-Saturday | Nov. 27-Nov. 29 |
| Christmas Vacation            | Monday-Friday     | Dec. 22-Jan. 2  |
| Martin Luther King's Birthday | Thursday          | January 15      |
| Washington's Birthday         | Monday            | February 23     |
| Patriots Day                  | Monday            | April 19        |
| Memorial Day                  | Monday            | May 31          |
| Independence Day              | Monday            | July 5          |
| Labor Day                     | Monday            | September 6     |

### **Equal Opportunity Policy**

Northeastern University is committed to a policy of providing equal opportunity for all. In all matters involving admission, registration, and all official relationships with students, including evaluation of academic performance, the University insists on a policy of nondiscrimination. Northeastern University is also an equal opportunity employer; it is institutional policy that there shall not be any discrimination against any employee or applicant for employment because of race, color, religion, sex, age, national origin, or physical or mental handicap. In addition, Northeastern takes affirmative action in the recruitment of students and employees.



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John A. Curry, A.B., Ed.M., *Dean of Academic Services, Assistant to the Executive Vice President, and Acting Dean of Admissions*

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Helene A. Loux, B.S., Ph.D., *Associate Dean of Allied Health Professions*

Alan A. Mackey, B.S., A.M., *University Registrar*

Melvin Mark, B.S., M.S., Sc.D., *Dean of Engineering*

Frank E. Marsh, Jr., A.B., M.Ed., D.Ed., *Dean of Education*

John Martin, B.S., M.B.A., *Assistant Business Manager*

Roland H. Moody, A.B., B.L.S., *Director of the University Library*

Timothy L. Moran, B.S., M.Ed., *Associate Dean of University College and Director of Law Enforcement Correctional and Security Programs*

Robert Najjar, B.A., M.B.A., *Bursar*

Harold Naidus, A.B., M.S., Ph.D., *Associate Dean of University College and Director of Liberal Arts Programs*

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Kenneth G. Ryder, *Vice Chairman*  
Loring M. Thompson, *Secretary*

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Arthur E. Fitzgerald  
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James S. Hekimian  
Sidney Herman  
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William F. King  
Juanita A. Long

Helene A. Loux  
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Alan A. Mackey  
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Irvin Doress  
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Conrad M. Jankowski  
Maurice Kaufman  
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Robert D. Klein  
Melvin Mark  
Robert W. Miller  
Richard G. Natoli

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°Appointed by the President



Charles H. Dufton  
John F. Dunn  
Ramona H. Edelin  
James M. Feldman  
Robert G. Finkenaur, Jr.  
° Arthur E. Fitzgerald  
Norbert L. Fullington  
Michael Glaubman  
Suzanne B. Greenberg  
Robert J. Hehre

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Asa S. Knowles  
or  
Arthur E. Fitzgerald

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Francis W. Casey, B.A., *Registrar of the Graduate Schools*

Geoffrey Crofts, B.Comm., *Director of the Graduate School of Actuarial Science*

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Albert Soloway, Ph.D., *Director of the Graduate School of Pharmacy and Allied Health Professions*

Janice Walker, A.B., *Assistant Director of the Graduate School of Education*

### **University Graduate Council 1975-1976**

The Council determines broad policies and regulations governing the conduct of graduate work. All new graduate programs must be approved by the Council.

#### **OFFICERS**

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Barbara Philbrick, *Vice Chairman*  
Sidney Herman, *Secretary*

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|                       |                   |
|-----------------------|-------------------|
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| Philip T. Crotty, Jr. | Frank E. Marsh    |
| George W. Hankinson   | Norman Rosenblatt |
| James S. Hekimian     | Philip J. Rusche  |
| John W. Jordan        | Robert A. Shepard |
| Robert H. Ketchum     | Albert Soloway    |

#### **Elected Faculty Members**

|                   |                     |
|-------------------|---------------------|
| Petros Argyres    | Harlan Lane         |
| Arlis Aron        | Parshotam Madan     |
| David Barkley     | Harold Miner        |
| Frederick Blanc   | Irene Nichols       |
| Paul V. Croke     | Barbara Philbrick   |
| Ernest M. DeCicco | John D. Post        |
| Romine Deming     | Nathan Riser        |
| Austin Fisher     | Alae-Eldin Sayed    |
| Alberto Galmarino | Joseph Senna        |
| Gilbert Garland   | Albert Soloway      |
| Victor Godin      | Ralph Troupe        |
| George Goldin     | Elizabeth Van Slyck |
| James Gozzo       | Victor Warner       |
| Arvin Grabel      | Arthur Weitzman     |
| Thomas Henstock   | Robert N. Wiener    |

Richard Higgins  
Christine Hobart  
Norman Kaplan

Joseph J. Zelinski  
Richard Zobel

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Francis W. Casey, *Secretary*

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Philip T. Crotty, Jr.  
Joseph M. Golemme  
George W. Hankinson  
James S. Hekimian  
John W. Jordan  
Robert H. Ketchum  
Alan A. Mackey

Melvin Mark  
Frank E. Marsh, Jr.  
Edmund J. Mullen  
John C. O'Byrne  
Barbara Philbrick  
Norman Rosenblatt  
Philip J. Rusche  
Robert A. Shepard  
Albert Soloway  
Jacqueline A. St. Germain

### *Ex Officio*

Arthur E. Fitzgerald, *Dean of Faculty*  
Loring M. Thompson, *Dean of Planning*

### **Committee of the Graduate Program in Criminal Justice 1975–1976**

Joseph Senna, *Chairman, Associate Professor of Criminal Justice*  
Frederick Cunliffe, *Professor of Criminal Justice*  
Romine Deming, *Associate Professor of Criminal Justice*  
Edith Flynn, *Associate Professor of Criminal Justice*  
Robert Fuller, *Graduate Program in Criminal Justice Administrative Assistant*  
Robert Gallati, *Professor of Criminal Justice*  
James Reed, *Assistant Professor of Criminal Justice*  
Norman Rosenblatt, *Dean of the College of Criminal Justice, ex officio*  
Stephen Schafer, *Professor of Criminal Justice*  
Larry Siegel, *Assistant Professor of Criminal Justice*  
Donna Turek, *Assistant Professor of Criminal Justice*



# the university

Founded in 1898, Northeastern University is incorporated as a privately endowed nonsectarian institution of higher learning under the General Laws of Massachusetts. The State Legislature, by special enactment, has given the University general degree-granting powers. The University is governed by a Board of Trustees elected by and from the Northeastern University Corporation, which is composed of 170 distinguished business and professional men and women.

From its beginning, Northeastern University has had as its dominant purpose the discovery of community educational needs and the meeting of these in distinctive and serviceable ways. The University has not duplicated the programs of other institutions, but has sought to pioneer new areas of educational service.

A distinctive feature of Northeastern University is its Cooperative Plan, initiated by the College of Engineering in 1909 and subsequently adopted by the Colleges of Business Administration (1922), Liberal Arts (1935), Education (1953), Pharmacy (1962), Nursing (1964), Boston-Bouvé College (1964), the College of Criminal Justice (1967), and Lincoln College's daytime Bachelor of Engineering Technology program (1971). As an educational method, the Cooperative Plan enables students to gain valuable practical experience as an integral part of their college program, and also provides the means by which they may contribute substantially to the financing of their education. The Plan has been extended to the graduate level in engineering, actuarial science, rehabilitation administration, professional accounting, business administration, and law.

In the field of adult education, programs of study have been developed to meet a variety of needs. University College offers evening courses — offered by the University since 1906 — and adult-day courses leading to the bachelor's degree. In addition to offering day undergraduate programs in Electrical Engineering Technology and Mechanical Engineering Technology, Lincoln College offers evening/part-time certificate, associate, and bachelor degree programs in technological areas. All formal courses of study leading to degrees through part-time programs are approved by the Basic College faculties concerned.

## **GRADUATE AND PROFESSIONAL SCHOOLS**

The ten graduate and professional schools of the University offer day and evening programs leading to the degrees listed.

The Graduate School of Actuarial Science offers the degree of Master of Science in Actuarial Science.

The Graduate School of Arts and Sciences offers the degrees of Master of Arts, Master of Science, Master of Science in Health Science, Master of Public Administration, and Doctor of Philosophy.

The Graduate School of Boston-Bouvé College offers the degree of Master of Science.

The Graduate School of Business Administration offers the degree of Master of Business Administration.

The Graduate Program in Criminal Justice offers the degree of Master of Science.

The Graduate School of Education offers the degree of Master of Education and the Certificate of Advanced Graduate Study.

The Graduate School of Engineering offers the degrees of Master of Science, Engineer degree, Doctor of Engineering, and Doctor of Philosophy.

The School of Law offers the degree of Juris Doctor.

The Graduate School of Pharmacy and Allied Health Professions offers the degrees of Master of Science and Doctor of Philosophy.

The Graduate School of Professional Accounting offers the degree of Master of Science in Accounting.

## **CENTER FOR CONTINUING EDUCATION**

The Center for Continuing Education was established in 1960 to relate the University to the needs of its community in a period of accelerated change. Adult education programs offered by the Center and University College have since been consolidated. Its programs are composed of seminars, conferences, institutes, forums, and a wide variety of special courses designed to serve specific needs. The Division of Special Programs, working cooperatively with trade associations and professional societies, offers a wide variety of programs dealing with current needs and problems. Through its Division of Community Services, working with governmental agencies and community organizations, the Center is becoming increasingly involved in social problems on both the local and national level.

Many of these programs are conducted at Henderson House, Northeastern University's conference center in Weston, Massachusetts.

## RESEARCH ACTIVITIES

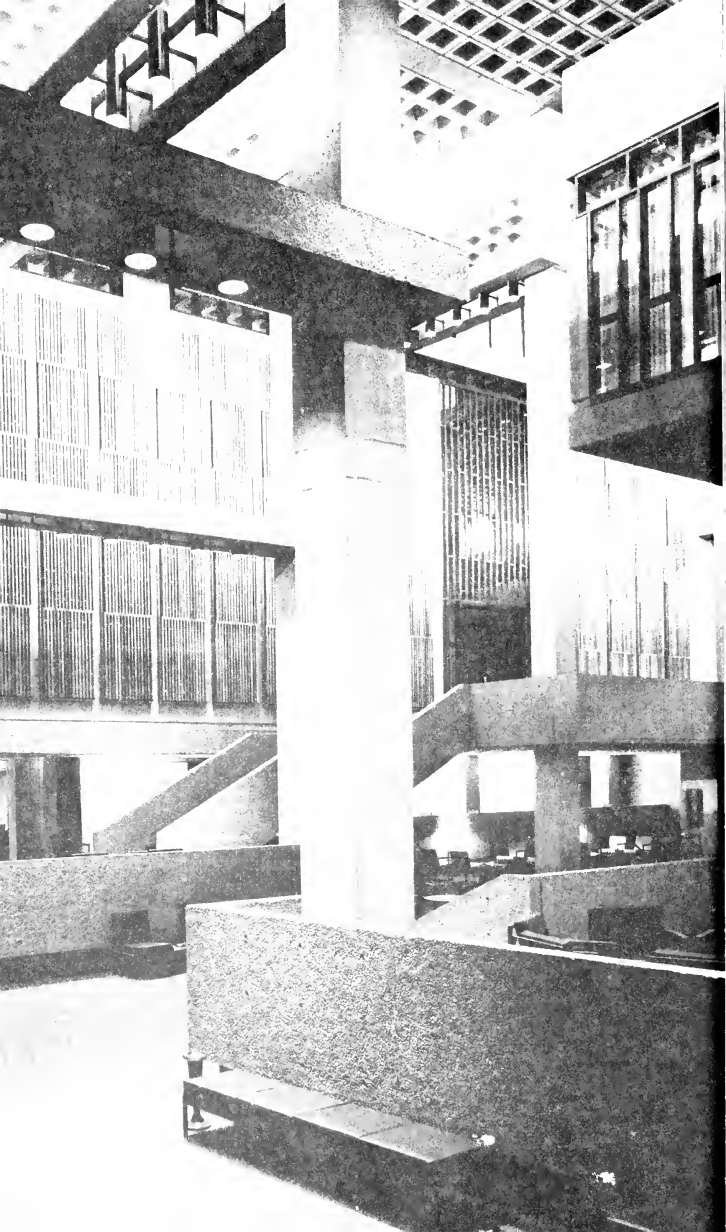
The facilities of the University are engaged in a wide variety of basic research projects in business, science, social science, pharmacy, and engineering. These are coordinated by the Dean of Research, whose services are University-wide and available to the faculties of all the Colleges.

Although Northeastern is primarily concerned with undergraduate and graduate instruction, the University believes that the most effective teaching and learning take place in an environment characterized by research activities directed toward extending the frontiers of knowledge.

## DEPARTMENT OF GRADUATE PLACEMENT SERVICES

Counseling and placement services are available to students and alumni of all University programs. A Job Bank of current opportunities located throughout Massachusetts and out of state is maintained, and individual counseling is available. For graduate students enrolled in programs operated on the Cooperative Plan, the Department makes possible an integration of academic work and professional experience in each field of concentration, by referring students to appropriate work assignments.

The Department also offers, on an ongoing basis, a seminar on the technology of job hunting, which teaches participants how to organize an effective job search. The seminar, which has received local and national media coverage in *The Washington Post* and *Newsweek* magazine, and on radio and television, discusses the techniques of building personal referral networks, conducting mail campaigns, and achieving successful interviews, as well as many other valuable tips. By offering the seminar and its other assistance, the Department provides a thorough and vital program of placement services.





# **buildings and facilities**

## **MAIN CAMPUS**

The main campus of Northeastern University is located at 360 Huntington Avenue in the Back Bay section of Boston. Many of the city's famous cultural, educational, and philanthropic institutions are situated in the Back Bay, including the Museum of Fine Arts, Symphony Hall, Horticultural Hall, the Isabella Stewart Gardner Museum, the Harvard teaching hospitals, the Boston Public Library, and many schools and colleges. Most are within walking distance of Northeastern University.

Major transportation facilities serving the Boston area are Logan International Airport, two rail terminals, bus terminals serving inter- and intrastate lines, and MBTA subway-bus service within the metropolitan-suburban area. There is a subway stop in front of the campus. For motorists, the best routes to the campus are the Massachusetts Turnpike (Exit 22) and Route 9, of which Huntington Avenue is the intown section.

The campus of 48 acres is divided by Huntington Avenue, with the main educational buildings on one side and dormitories on the other. The principal buildings, all of which have been constructed since 1938, are of glazed brick in contemporary classic style. Most are interconnected by underground passageways.

## **Eli Student Center**

The Carl S. Eli Student Center provides facilities for student recreation and for extracurricular activities. The Alumni Auditorium, with a seating capacity of 1,300, is part of the Center. Also included are special drama facilities, a ballroom main lounge, fine arts exhibition area, student offices, conference rooms, and a dining area seating more than 1,000.

## **Libraries**

The University library system consists of the Dodge Library, which is the main library; the Suburban Campus Library at Bur-

lington; the School of Law Library; and divisional libraries for Physics and Electrical Engineering, Chemistry and Biology, Mathematics and Psychology, Health, Physical, and Recreation Education, and Physical Therapy. There are additional subject collections for the Center for Management Development in Andover, Massachusetts, and the Marine Science Institute in Nahant.

The library collections number 360,000 volumes supplemented by some 267,000 titles in microprint, microfilm, and microfiche forms. The collection includes, in addition, some 3,500 periodical titles, 90,000 documents, and 4,600 sound recordings.

### **Cabot Physical Education Center**

The Godfrey Lowell Cabot Physical Education Center is one of the best equipped in New England. The large gymnasium contains four basketball courts. In addition, the Center consists of an athletic cage, a small gymnasium, and a rifle range, as well as administrative offices for the Department of Athletics and for the Physical Education Department of Boston-Bouvé College.

A recent addition to the Center, the Barletta Natatorium, houses a 105-foot swimming pool, a practice tank for the crew, handball courts, and shower and dressing facilities.

### **Dockser Hall**

Charles and Estelle Dockser Hall, completed in 1968, houses a large gymnasium, dance studio, motor performance laboratory, college library, community recreation laboratory, folk arts center, dark and music rooms, recreation resources area, locker rooms, offices, classrooms, conference room and lounge, storage facilities, and a research laboratory.

### **Apartments for Graduate Students**

The University maintains a 100-apartment housing unit which accommodates 279 people. Two-, three-, and four-party apartments are available, which vary in size from two to four rooms plus bath. Apartments are furnished with beds, chairs, desks, stove, refrigerator, and kitchen table. The cost includes all utilities.

A \$50 deposit is required when making application for the apartments. Applications are available in the Office of University Housing. Students are expected to make such arrangements on a term-to-term basis, but may live in the apartments both while on cooperative work assignments and in school, if they wish. All reservations are made on a first come, first served basis.

## **SUBURBAN FACILITIES**

### **Suburban Campus**

The Suburban Campus, located near the junction of Routes 128 and 3 in Burlington, Massachusetts, was established to meet the needs of individuals and of industry in the area.

In addition to graduate courses in engineering, physics, mathematics, business administration, science, education, and the arts, portions of undergraduate programs leading to the associate and bachelor's degrees, special programs for adults, and noncredit state-of-the-art programs are offered.

### **Warren Center**

The Warren Center is a practical laboratory for Boston-Bouvé College in outdoor education and conservation, in group practicum, and in camping administration, programming, and counseling. At this Center in Ashland, completed in 1967, there are tennis courts, field hockey and lacrosse fields, waterfront for swimming and boating, overnight camp sites, fields and forests, heated cottages, and the Hayden Lodge with a recreation hall, library, crafts shop, dining facilities, and conference accommodations.

### **Henderson House**

The University's conference center, Henderson House, is located in Weston, Massachusetts. The Center for Continuing Education conducts short-term courses, seminars, and special institutes for business, professional, and research groups. Henderson House is 12 miles from the main campus.

### **Marine Science Institute**

The Marine Science Institute at Nahant, Massachusetts, is a research and instructional facility engaged primarily in studies of marine biology and oceanography. The Institute is operated all year, and is about 20 miles northeast of Boston. Many of the courses at this institute are applicable toward an advanced degree in biology or health science.



# **college of criminal justice graduate program**

The Graduate Program in Criminal Justice at Northeastern University offers both a full- and part-time program leading to a Master of Science degree. Students have the opportunity to choose among three major concentrations of study: administration, policy development, and planning; behavioral science theory; and research. Development of leadership qualities is stressed in each specialization. The purpose of the graduate program is to provide innovative concepts in academic study and research of crime using the criminal justice process.

The master's program in criminal justice concentrates on the problem of crime as a form of deviant behavior through a system established in response to that problem. The multidisciplinary academic program emphasizes a systems approach to criminal justice, and stresses organizational and management theory. Broad in concept, the program is to be understood as encompassing such related disciplines as law, sociology, political science, psychology, criminology, and public administration. Its primary educational function is to prepare individuals for research, teaching, and administration within a changing criminal justice system.

Faculty members represent several academic disciplines. Teaching activities vary in nature and depend on the instructor's specific objectives. Specialized areas include courses in community treatment, delinquency, correctional management, criminology, and criminalistics.

The goals of graduate study in the College of Criminal Justice are:

1. To develop leaders capable of assuming responsibility for policy planning, administration, and group leadership.
2. To prepare individuals for criminal justice teaching positions in community colleges and other educational institutions.
3. To provide students with the necessary skills and knowledge for applied research and to facilitate their ability to discern problem areas.
4. To provide a foundation for advanced doctoral study.

### **FULL-TIME STUDY**

Graduate study in criminal justice may be pursued through either a full- or part-time program. Full-time study allows for completion of course work within one academic year, beginning in September and ending in June of the following year. A substantial portion of the full-time student's time is devoted to academic study. However, simultaneous work on the thesis is expected during this period. Most students finish the thesis requirement in one additional quarter, thereby completing the program within one calendar year.

### **PART-TIME STUDY**

Graduate study is also possible on a part-time basis. The part-time student is allowed to carry a maximum of two courses per quarter. Close consultation with a faculty adviser helps the part-time student determine a workable sequence of courses, and decide the number of credits to be carried each quarter. All degree requirements must be completed within five years from the date of enrollment.

### **GENERAL REGULATIONS**

The general regulations and minimum requirements for all graduate programs are established by the Northeastern University Graduate Council. In some matters the committee of each graduate school is allowed discretion to establish regulations within limits defined by the Council. The regulations and academic requirements which follow have been formulated in accordance with this general policy.

### **Application**

All applicants should address inquiries to the Graduate Program of Criminal Justice. Application forms and information will be mailed promptly.

## Registration

Students must register within the period listed on the school calendar. Registration is not permitted after this period.

## Residence

All work for advanced degrees must be completed in residence at the University, unless approval has been obtained from the Director of the Graduate Program in Criminal Justice for work taken elsewhere. Students who are in residence and using the facilities of the University must register for such work.

## Grading System

The performance of students in graduate courses is recorded by the instructor, using the following grades:

- A Excellent  
For performance of high graduate caliber
- B Satisfactory  
For performance at a satisfactory level
- C Fair  
For performance not at the level expected in graduate work
- F Failure  
For unsatisfactory performance
- I Incomplete  
For failure to complete course work

The designation "I" will be changed to a grade upon removal of the deficiencies which caused the "I" to be reported. Deficiencies must be removed within a period stipulated by the professor.

Any student who wishes to take a make-up examination must obtain permission from the professor teaching the course. A reasonable time period for the examination is discussed with and set by the professor.

## Class Hours and Credits

All credits at Northeastern University are entered as quarter-hour credits, with a quarter hour of credit being equivalent to three-fourths of a semester hour: i.e., 12 semester hours are equal to 16 quarter hours.

All classes in the Graduate Program in Criminal Justice meet on a quarter basis, with an academic quarter defined as a term of approximately 12 weeks' duration. The academic calendar in the front of this bulletin should be consulted to determine the opening dates of each quarter.

## **Continuity of Program**

Students are expected to maintain continuous progress toward a degree. Any student who does not attend Northeastern for a period of one year must apply for readmission.

## **Withdrawals**

In order to withdraw from a course, a student must fill out an official withdrawal form obtained at the Registrar's Office. Withdrawals may be made through the ninth class meeting of the quarter. Students will be withdrawn as of the date on which they complete the form. Ceasing to attend a class or notifying the instructor does not constitute an official withdrawal. Petitions for withdrawal from a course after the ninth class meeting of the quarter must be submitted to the Director of the Graduate Program, and may be approved to avert unusual hardships on the student.

Students who do not attend the first two sessions will be dropped from the class unless they notify the Registrar of their intention to continue.

## **Changes in Requirements**

The continuing development of the Graduate Program requires occasional revision of curricula. In every new bulletin, some improvements are indicated. When changes impose no hardships on the student and school facilities permit, the student is expected to meet the requirements of the latest bulletin. If the student finds it impossible to meet these requirements, the bulletin for the year in which he entered becomes the binding one.

## **Application for the Diploma**

If a commencement card is not filed with the Registrar's Office on or before the applicable date listed on the calendar, there is no assurance that the degree will be granted in that particular year, even though all other requirements have been fulfilled.

# **THE MASTER OF SCIENCE DEGREE**

## **Admission Requirements for Degree Candidacy**

All applications for graduate study in Criminal Justice are reviewed by the Graduate Admissions Committee and must include:

1. A completed application accompanied by a nonrefundable \$15 application fee.



2. Official transcript(s) from accredited institution(s) as evidence of earning a baccalaureate degree with a grade point average of approximately 3.0 or higher.
3. Official scores from the aptitude test of the Graduate Record Examination or Law School Aptitude Test; above-average scores are preferred.
4. Three letters of recommendation from academic, professional, or personal sources; academic references are preferred.
5. An essay of not more than 400 words which expresses academic and personal objectives.

No one factor is used to select candidates for the program. The Graduate Admissions Committee receives all applications and considers a variety of factors, including previous work experience and professional potential, in addition to academic record and test scores. When possible, students are asked to participate in an admissions interview to help the Committee make a complete evaluation.

Consideration for admission is given only after all application material, including the \$15 application fee, has been received by the Graduate Program in Criminal Justice.

### **Student Classifications**

Students whose credentials meet the criteria listed above are classified as full- or part-time regular students.

*Part-time provisional* students are individuals who did not meet admission standards but who, in the opinion of the Graduate Committee, have the potential for graduate work. Applicants for full- or part-time regular status whose credentials do not warrant acceptance are automatically considered for part-time provisional status.

Upon completion of 12 quarter hours of course work at Northeastern, the provisional student must request a transfer to regular student status in the Graduate Program. To be considered for transfer, 6 of the 12 credits must be from required courses offered by the Graduate Program in Criminal Justice with a grade of at least B. An overall cumulative grade average of B must be maintained in courses taken outside the College of Criminal Justice.

*Special students* may take courses on a nondegree basis only by obtaining permission from individual instructors. Should a special student desire admission to the degree program as a regular student, he/she must meet standard admission requirements. Up to 12 credits (no more than two courses per quarter) may be

taken as a special student before applying for admission. All courses must result in a grade of B or better; if 12 credits have been completed, 6 must be from required courses.

### **Academic Requirements for the Master's Degree**

All candidates for the Master's Degree in Criminal Justice are required to complete the following:

1. A total of 42 hours of course credit.
2. Thirty-six of the total 42 hours completed in classroom work, 18 of which are required courses and 18 elective courses.
3. Completion of an acceptable thesis valued at 6 credits.
4. Satisfactory performance on a comprehensive written examination. Full- and part-time students may apply to take the comprehensive examination when they have completed all course requirements.

Students in the program must earn a grade of B or above in all required and elective courses offered within the Graduate Program in Criminal Justice. An average of B or above is also required in all other elective courses taken within the University. Each student is expected to maintain an overall average of B or better in all course work to remain in the program.

Within the above limitations, a criminal justice required or elective course for which a grade of F is received, must be repeated with a grade of B or better, and may be repeated only once. If a grade of F is received in a University elective course, that course may be repeated once to obtain a grade of C or better, or another elective course may be substituted. If a grade of C is received in a required course, provisions may be made with the professor to correct the deficiency.

### **Program Selection**

Upon acceptance as a degree candidate, the student is assigned a temporary adviser in his/her major area of concentration. In consultation with his/her adviser, the student develops a program of study, including program objectives, anticipated courses, and estimated dates of completion of the various degree requirements. The temporary adviser also helps the student select a thesis committee which assists him/her in all academic matters, as well as in the development and completion of the thesis.

### **Transfer Credits**

Individuals who have been enrolled in other graduate degree programs, who have earned a graduate degree, or who have

taken graduate courses on a nondegree basis may be granted credit at the discretion of the Graduate Committee. A maximum of 12 quarter hours of credit from another institution is acceptable providing it meets specified requirements. Courses should be the equivalent of or comparable to courses offered in the Graduate Program in Criminal Justice. If accepted, each course represents 3 quarter hours of credit. A petition for transfer of credit, obtainable from the College of Criminal Justice, together with official transcripts and course descriptions from the institution(s) attended, must be provided before committee action will be taken.

### **Comprehensive Examination**

Each candidate takes a comprehensive examination no later than one month prior to the expected date of graduation. This examination may be taken when the candidate has completed all course requirements, as the subjects tested are commensurate with the student's area of concentration.

A grade of B or better must be achieved in the examination. A student who fails may be given a reexamination under conditions determined by the Director of the Graduate Program or his designate.

### **Thesis**

Each candidate must submit a thesis which exhibits his research ability and increases his scope of individual specialization. The thesis proposal is submitted for approval to the candidate's thesis committee: a chairman and one or two members proposed by the student. Once approved, the thesis committee serves as an advisory board on idea development. The completed thesis must be approved by the thesis committee, graduate committee, and Director of the Graduate Program.



# financial information

## FINANCIAL OBLIGATIONS

### Tuition

Tuition rates and fees are subject to revision by the Board of Trustees at any time. However, any change in tuition and fees will become effective at the beginning of the school year which follows the one in which the change was announced.

Tuition for master's degree candidates and special students is \$61 per quarter hour of credit.

Tuition statements are mailed to students by the Bursar's Office and are payable by check to Northeastern University on or before the date specified.

### Fees

All applications must be accompanied by a nonrefundable application fee of \$15. No application will be processed until the fee has been received by the Graduate Program in Criminal Justice. Checks should be made payable to Northeastern University and sent, with the application, to the Graduate Program in Criminal Justice, Northeastern University, 360 Huntington Avenue, Boston, Massachusetts 02115.

Other fees include a charge of \$10 for late payment of tuition and a fee of \$25 for all degree candidates, payable before commencement by the applicable date listed on the academic calendar.

Full-time students are charged \$12.50 per quarter for the services available in the Student Center; part-time students are charged \$.75 a quarter.

All financial obligations to the University must be discharged prior to graduation.

## Refunds

Tuition refunds are granted only on the basis of the date appearing on the official withdrawal form filed by the student. Non-attendance does not constitute official withdrawal. Questions regarding refunds should be discussed with the Bursar's Office.

Refunds will be granted in accordance with the following schedule:

| Official Withdrawal<br>Filed Within | Percentage of<br>Tuition Refunded |
|-------------------------------------|-----------------------------------|
| First week of quarter               | 100                               |
| Second week                         | 75                                |
| Third week                          | 50                                |
| Fourth week                         | 25                                |

## FINANCIAL AID

There is a limited amount of financial aid for part-time students enrolled in the Graduate Program in Criminal Justice. Graduate assistantships and/or fellowships in the College are not available to part-time students. A limited number of research fellowships may be available to qualified full-time graduate students. Research fellows are selected on the basis of academic background, research potential, and a written research proposal. Assigned duties require 18-20 hours per week, for which the student receives a stipend of \$3450 per calendar year and a tuition waiver.

## Martin Luther King, Jr. Scholarships

A limited number of full- and part-time Martin Luther King, Jr. Fellowships are available. These scholarships provide for remission of tuition and all fees, and are awarded to qualified black students on the basis of financial need. Additional information and application forms are available from the Office of Financial Aid.

## Dormitory Proctorships

A number of proctorships in men's dormitories on or near the Huntington Avenue Campus are available each year. Appointments carry a minimum compensation of room and board. Further information and application forms may be obtained from the Office of University Housing.

## **National Direct Student Loan**

Under provisions of an act of the Federal government, students carrying an academic load of one-half or more are entitled to loans up to \$2,500 for one school year and up to a total of \$10,000 for undergraduate and graduate work. The actual amount of any award will be determined on the basis of need and academic promise.

The repayment period begins nine months after the borrower ceases to carry a half-time load and extends ten years from that point at an annual interest rate of three percent. Up to 100 percent may be cancelled for teachers in special education. Additional information and application forms are available from the Office of Financial Aid. The application deadline is September 1 for full-time students, and one month prior to the start of the quarter for which aid is requested, for other students.

## **Higher Education Loan Plan (Guaranteed Student Loan Plan)**

Educational assistance loans may be available from certain banks in the student's home town. These loans, guaranteed by state agencies, carry an interest charge of seven percent, three percent of which is paid by the Federal government. Graduate students may borrow up to \$2,500 for each year of study, up to a maximum of \$10,000 for both undergraduate and graduate work. Monthly repayment begins nine to twelve months after completion of study, and extends up to five years for amounts less than \$2,000 or up to ten years for amounts greater than \$2,000. Applicants for this loan are required to complete a need analysis form. Additional information and application forms are available from the Office of Financial Aid.

## **Law Enforcement Assistance Administration**

The Law Enforcement Assistance Administration, U.S. Department of Justice, has set up an Office of Academic Assistance under authority of the Omnibus Crime Control and Safe Streets Act of 1968, Public Law 90-351. Through the University, loans up to \$2,200 per year for tuition, and grants up to \$250 per academic quarter for tuition and fees are available to law enforcement personnel in undergraduate or graduate programs leading to degrees or certificates in areas directly related to law enforcement.

The loans, limited to full-time students in or preparing for law enforcement or corrections careers, are cancelled at the rate of 25 percent for each year the recipient subsequently serves in law enforcement at federal, state, or local level.

The grants are available to full-time or part-time students employed in a publicly-funded law enforcement agency, and involve a signed agreement to remain in the service of a law enforcement agency employing such applicant, for two years following completion of the course for which aid was given.

Applications for loans or grants should be obtained from the Office of Financial Aid, Room 252 Richards Hall.

**Please note: Aid granted from programs sponsored by the Federal government is dependent upon the amount of funds allocated to Northeastern. The University does not award financial assistance in any form to non-citizens of the United States.**



# faculty

## GRADUATE TEACHING FACULTY AND STAFF OF THE COLLEGE OF CRIMINAL JUSTICE

Ames, Lois, B.A., M.A., A.C.S.W. certified, *Assistant Professor of Criminal Justice*

Croatti, Robert, B.S., *Assistant to the Dean of Criminal Justice*

Cunliffe, Frederick, B.S., M.S., Ph.D., *Professor of Criminal Justice*

Deming, Romine, B.A., M.S., Ph.D., *Associate Professor of Criminal Justice*

Fuller, Robert, B.S., M.S., *Administrative Assistant, Graduate Program in Criminal Justice*

Flynn, Edith, B.A., M.A., Ph.D., *Associate Professor of Criminal Justice*

Gallati, Robert, B.S., L.L.B., L.L.M., D.J.S., *Professor of Criminal Justice*

Kassler, Haskell, B.A., J.D., *Assistant Professor of Criminal Justice*

Natoli, Richard, B.S., M.A., *Assistant Professor of Criminal Justice*

Reed, James, B.F.A., M.A., *Assistant Professor of Criminal Justice*

Rosenblatt, Norman, B.A., M.A., Ph.D., *Dean of the College of Criminal Justice, Director of the Graduate Program in Criminal Justice*

Schafer, Stephen, D. Jur., Prof. Agrégé, *Professor of Criminal Justice*

Senna, Joseph, B.A., M.S.W., J.D., *Associate Professor of Criminal Justice*

Sheehan, Robert, B.A., M.A., *Professor of Criminal Justice*

Siegel, Larry, B.A., M.A., *Assistant Professor of Criminal Justice*

Turek, Donna, B.A., M.A., *Assistant Professor of Criminal Justice*



# fields of study

## PROGRAMS IN PROFESSIONAL SPECIALIZATIONS

### Master of Science

The master's curriculum is divided into two categories of major concentration: (1) Criminal Justice Administration Planning and Development, and (2) Behavioral Science Theory and Research. Model and specimen programs for each concentration can be found on pages 39-41 in this bulletin. Students must choose one of the two concentrations and complete one of the programs outlined in the following pages.

### Group I Core Curriculum (18-20 credits)

This group consists of all required graduate courses offered and taught by the faculty of the College of Criminal Justice. Core courses are taken by all students regardless of major concentration or elective interest. *Students interested in Behavioral Science Theory are required to take one additional core course, Juvenile Justice and Delinquency, making a total of 21 credits of core courses.* The core curriculum encompasses a broad area of topical information, and comprises a solid foundation for graduate study in criminal justice.

### Course

|   |            |
|---|------------|
| Administration of Criminal Justice        | 3          |
| Theories in Criminology                   | 3          |
| Legal Issues in Criminal Justice          | 3          |
| Criminal Justice Planning and Development | 3          |
| Statistical Analysis                      | 3          |
| Research Methods in Criminal Justice      | 3          |
|   | <hr/>      |
|   | 18 credits |

cont.

|  |                              |
|--|------------------------------|
| Juvenile Justice and Delinquency<br>(TO BE TAKEN BY STUDENTS<br>CONCENTRATING IN BEHAVIORAL<br>SCIENCE THEORY) | <u>3</u><br>21 credits       |
| THESIS   | <u>6</u><br>27 or 24 credits |
| Elective Courses   | <u>15</u> or 18              |
| TOTAL PROGRAM  | 42 credits                   |

## Group II

The following is a list of elective courses offered and taught by the faculty of the Graduate Program in Criminal Justice. These courses involve specific problems of crime and criminal justice, while the required courses are more general in nature and emphasize the comprehensive systems approach to criminal justice.

### Course

|   |   |
|---|---|
| Conflict Management in Criminal Justice | 3 |
| Deviance, Stigma, and Justice           | 3 |
| Correctional Services in the Community  | 3 |
| Penology                                | 3 |
| Juvenile Justice and Delinquency        | 3 |
| Forensic Science                        | 3 |
| Research Methods II                     | 3 |
| Field Practicum                         | 3 |

## Group III Elective Curriculum

Elective courses offered by and taught in the following graduate programs may be credited toward meeting degree requirements for the Master of Science in Criminal Justice:

Graduate School of Arts and Sciences  
 Graduate School of Business Administration  
 School of Law  
 Graduate School of Professional Accounting  
 Graduate School of Engineering  
 Graduate School of Education  
 Graduate School of Pharmacy and Allied Health Professions  
 Graduate School of Boston Bouvé College

**MODEL PROGRAM****MASTER'S DEGREE PROGRAM IN CRIMINAL JUSTICE****QUARTER I**

| <b>Course</b>                             | <b>Credits</b> |
|---|----------------|
| Administration of Criminal Justice        | 3              |
| Theories in Criminology                   | 3              |
| Statistical Analysis                      | 3              |
| Criminal Justice Planning and Development | 3              |
| Total                                     | <u>12</u>      |

**QUARTER II**

| <b>Course</b>                    | <b>Credits</b> |
|----------------------------------|----------------|
| Research Methods I               | 3              |
| Legal Issues in Criminal Justice | 3              |
| Juvenile Justice and Delinquency | 3              |
| Elective                         | 3              |
| Total                            | <u>12</u>      |

**QUARTER III**

| <b>Course</b> | <b>Credits</b> |
|---------------|----------------|
| Elective      | 3              |
| Elective      | 3              |
| Elective      | 3              |
| Elective      | 3              |
| Total         | <u>12</u>      |

**SUMMARY**

|  | <b>Credits</b> |
|--|----------------|
| Thesis   | 6              |
| Required Courses in Criminal Justice           | 21             |
| Electives from Criminal Justice and University | 15             |
| TOTAL  | <u>42</u>      |

**SPECIMEN PROGRAM I****MAJOR CONCENTRATION****Administration, Policy Development, and Planning****QUARTER I**

| <b>Course</b>                             | <b>Credits</b> |
|---|----------------|
| Administration of Criminal Justice        | 3              |
| Theories in Criminology                   | 3              |
| Statistical Analysis                      | 3              |
| Criminal Justice Planning and Development | 3              |
| Total                                     | <u>12</u>      |

**QUARTER II**

| <b>Course</b>   | <b>Credits</b> |
|---|----------------|
| Research Methods I  | 3              |
| Legal Issues in Criminal Justice                          | 3              |
| Criminal Justice Elective                                 | 3              |
| Functions and Techniques of Public Management<br>(22.874) | 3              |
| Total   | <u>12</u>      |

**QUARTER III**

| <b>Course</b>                                   | <b>Credits</b> |
|---|----------------|
| Criminal Justice Elective                       | 3              |
| Criminal Justice Elective                       | 3              |
| Urban Sociology (21.885)                        | 3              |
| Organization and Administrative Theory (50.953) | 3              |
| Total   | <u>12</u>      |

**SUMMARY**

|                                      | <b>Credits</b> |
|--------------------------------------|----------------|
| Thesis                               | 6              |
| Required Courses in Criminal Justice | 18             |
| Elective Courses in Criminal Justice | 9              |
| Elective Courses from University     | 9              |
| TOTAL                                | <u>42</u>      |

**SPECIMEN PROGRAM II****MAJOR CONCENTRATION****Behavioral Science Theory and Research****QUARTER I**

| <b>Course</b>                             | <b>Credits</b> |
|---|----------------|
| Administration of Criminal Justice        | 3              |
| Theories in Criminology                   | 3              |
| Statistical Analysis                      | 3              |
| Criminal Justice Planning and Development | 3              |
| Total                                     | <u>12</u>      |

**QUARTER II**

| <b>Course</b>                             | <b>Credits</b> |
|---|----------------|
| Research Methods I                        | 3              |
| Legal Issues in Criminal Justice          | 3              |
| Juvenile Justice and Delinquency          | 3              |
| Personality and Social Structure (50.805) |                |
| or  | 3              |
| Operations Research for Criminal Justice  |                |
| Total                                     | <u>12</u>      |

**QUARTER III**

| <b>Course</b>                         | <b>Credits</b> |
|---------------------------------------|----------------|
| Criminal Justice Elective             | 3              |
| Criminal Justice Elective             | 3              |
| Foundations of Social Theory (21.805) |                |
| or                                    | 3              |
| Research Methods II                   |                |
| Social Psychology I (19.920)          |                |
| or                                    | 3              |
| Introduction to Data Processing       |                |
| Total                                 | <u>12</u>      |

**SUMMARY**

|                                      | <b>Credits</b> |
|--------------------------------------|----------------|
| Thesis                               | 6              |
| Required Courses in Criminal Justice | 21             |
| Elective Courses in Criminal Justice | 6              |
| Elective Courses from University     | 9              |
| TOTAL                                | <u>42</u>      |

Place  
Materials For  
Helping Here





# **courses**

## **DESCRIPTION OF COURSES**

All courses carry three quarter hours of credit unless otherwise specified.

### **92.904 Administration of Criminal Justice**

A description and analysis of the criminal justice process from prevention and arrest to release after incarceration. Concentration is on a systems approach to understanding criminal behavior. The philosophies, practices, and procedures of agencies responsible for the administration of justice are viewed and critical efforts made to deal with the effectiveness of different approaches to crime control.

### **92.907 Theories in Criminology**

The history and development of criminological theories from ancient to contemporary times. It examines the assumptions of theoretical models and relates them to the development of criminal policies. Psychological, sociological, and cultural theories underlying deviant criminal behavior are reviewed.

### **92.910 Nature and Extent of Crime**

An extensive examination of the nature and volume of crime in the U.S. and foreign countries. Course content includes types of crimes and offenders, geographic distribution of crime patterns, cost of crime, and a critical review of techniques used to measure crime.

**92.913 Criminal Justice Planning and Development**

Introduction to planning techniques and their impact on criminal justice program development, now and in the future. Policy and decision-making procedures pertaining to affiliated agencies and organizations are analyzed. The extent of planning for crime control on local, state, regional, and national level is studied. The peculiar nature of urban crime problems in relation to planning is also reviewed. Planning involves identification of problem areas, diagnosing causation, formulating solutions, alternative strategies, and mobilizing resources necessary to effect change in the system.

**92.916 Statistical Analysis**

An analysis of the application of statistics in research, and the basic assumptions underlying statistical procedures. The course covers descriptive and inferential statistical procedures such as sampling, laws of probability theory, hypothesis testing, analysis of variance, and multiple regression.

(Students with a background in statistics may make a special request to replace this course with an elective.)

**92.957 Research Methods in Criminal Justice I**

Survey of methods and approaches utilized for independent research, as well as the evaluation of existing criminal justice programs. It considers research methods and empirical findings through assigned research techniques including design, instrument construction, data processing, and analysis interpretation.

**92.958 Research Methods in Criminal Justice II**

Advanced research design problems are examined. Criminal justice programs are evaluated quantitatively, with concentration placed on coding, schedule construction, sampling theory, and statistical models measuring causation.

**92.841 Criminal Law**

General principles of the criminal law, including the concept of responsibility for crimes, limitations on capacity, and basic elements of crimes. The sources and purposes of criminal law are analyzed, and different conceptions of crime and current law reform are discussed.

**92.800 Law Enforcement Practices**

This course involves a study of the current theory and practices in the field of law enforcement. Major problems which confront the law enforcement process are considered, as well as the methods now used by law enforcement agencies.

**92.804 Correctional Services in the Community**

An analysis of treatment and supervisory activities, including probation and parole for offender groups while in the community. There is a thorough exploration of community resources and services such as vocational rehabilitation, welfare services, mental health clinics, employment services, and legal aid. Effectiveness of community treatment is examined through case studies.

**92.810 Penology and Corrections**

This course deals essentially with the process of incarceration and the social structure of the prison community. Consideration is given to management, operation effects, and the effectiveness of different institutions. Modern correctional approaches and current rehabilitation practices are also discussed.

**92.816 Social Deviance**

Crime as a form of social deviance is studied through intensive reading of a wide range of sociological literature on deviant behavior and its relationship to crime. Included are relevant selections from Durkheim, Merton, Cohen, Goffman, Becker, Matza, Ohlin, and Schur.

**92.851 Juvenile Justice and Delinquency**

A study of the juvenile justice system from community concern to the subsequent disposition. The class analyzes juvenile and family court procedures and questions of jurisdiction. Various theories of delinquency developed from law, sociology, psychology, and related disciplines are also covered.

**92.822 Forensic Science**

The development of forensic science is summarized according to its effects on the criminal justice system. Lecture and laboratory work examine various ways the physical sciences contribute to the establishment of scientific criminal evidence. Designed primarily for students who plan to enter a profession requiring an understanding of criminalistics.

### **92.828 Field Practicum**

Field instruction in a criminal justice agency where the instruction may be given in administration, research, teaching, and/or related activities. Students have the opportunity to apply theoretical concepts in a practical, applied fashion by observing and contributing to the daily activities of operating agencies and organizations.

### **92.860 Conflict Management in Criminal Justice**

An examination of problems in conflict management. Concepts and definitions of social conflict, and comparisons between functional and dysfunctional conflict are explored. Inquiries into representative conflict management strategies and techniques are made, which afford the opportunity to relate general theory and research results to practical situations of criminal justice conflict management. A variety of heuristic techniques is anticipated, such as: scenarios, roleplaying, and use of audiovisual media.

### **92.809 Deviance, Stigma, and Justice**

Stigmatization is accurately defined as it is found to exist in different segments of our society. Its history in the United States is traced through examples of specific topics, such as: employment of ex-offenders, social acceptance of mental patients, ethnic discrimination, and homosexuality.

### **92.806 Conflicting Values and the Criminal Justice System**

An investigation of ideologies, institutions, and ethnic mores as they affect black values and reactions to the criminal justice system. Integration, rebellion, and institutionalization are subjects of discussion.

### **92.830 History of Police in the United States**

A review of the history of police activities in the United States, emphasizing black community relations. The study of previous policy provides a broad, revealing perspective from which to view contemporary departments. From this framework, the class analyzes societal expectations of the police.

### **92.808 Criminal Behavior, Psychiatry, and the Public**

An introduction to the field of psychiatric criminology which exam-

ines the known psychological sources of criminal behavior. Psychiatric concepts are applied to crime prevention, the examination and rehabilitation of the offender, and the legislative process.

### **92.862 Drug Abuse, Mental Health, and the Public**

An introductory course concerning drug abuse. The mental health and medico-legal aspects of the problem are emphasized by concentrating on the areas of prevention and rehabilitation, public attitudes on drug abuse, and drug abuse education.

### **92.905 Legal Issues in Criminal Justice**

An in-depth study of contemporary legal questions faced by criminal justice professionals. Emphasis is placed on constitutional problems, and the judicial review of administrative decisions made by criminal justice organizations. Topics to be considered are: selected provisions of the United States Constitution with particular emphasis on amendments 4, 5, 6, and 14; questions of electronic surveillance; right to counsel; line-up, bail, and right to speedy trial; sentencing; legal aspects of probation and parole; and prisoners' rights.

### **92.808 Criminal Behavior, Psychiatry, and the Public**

An introduction to the field of psychiatric criminology. Examines current knowledge of the psychological sources of criminal behavior and the application of psychiatric concepts to the area of crime prevention, the examination and rehabilitation of the offender, and the legislative process.

### **92.812 Management Issues in Law Enforcement**

An analysis of controversial issues confronting the law enforcement administrator in determining policy and directing procedures. Current and planning practices are critiqued from the standpoint of rapidly accelerating innovation and a changing value system.

### **92.811 Contemporary Problems in Corrections**

A seminar focusing on the current crisis facing the American correctional system. It is designed to provide the student with a working perspective on some of the most salient issues in the field today: to critically reexamine the important precepts for corrections which have heretofore been treated as given; to analyze

contemporary problems in the light of corrections relationship to the other components of the criminal justice system; to explore avenues to more effective ways to deal with alleged and convicted offenders. The theoretical focus and general perspective of the seminar is sociological.

### **92.801 The Ombudsman**

An examination of the concept of the ombudsman as an intervenor for justice. The ombudsman, as a government official to check on government, is an established post in several European countries, particularly Scandinavia. In this country ombudsmen have already appeared in such diverse institutions as hospitals, city halls, prisons, and universities, and a number of states have established ombudsman offices. It has been urged that ombudsmen are needed at the various levels of American government. Massachusetts considered two ombudsman bills in this session of the legislature: One would create the Office of Ombudsman for Corrections; the other would create the Office of Residential Care Ombudsman for the Commonwealth. In this course, the readings and lectures will be supplemented by the appearance of knowledgeable guest speakers if possible.

### **92.813 Correctional Administration**

Concentration is on a general systems approach to organizational design and management in corrections. The major focus of the course is on the application of the managerial process, which places emphasis on the organization's totality, regarding it as "an organized or complex whole." As such, the general system approach views an organization's subsystems as secondary in importance to the primary system, and as mutually interdependent, and holds, as axiomatic, that subsystems cannot be altered without affecting other subparts of the whole. It is the object of the course to critically examine the organization and administration of the "corrections system" within and among the various political jurisdictions of the United States; to analyze administrative practices; to determine those processes which may encourage, facilitate, and develop more effective, efficient, innovative, economical, and humane organizational systems in corrections.

### **92.815 Deviance and Criminal Justice**

A critical examination of existing theories about deviant behavior—crime, juvenile delinquency, substance abuse, mental illness, homosexuality, and prostitution—; how they are used as general-

ized ways to approach deviance, and their possible implications for the development of a more comprehensive, general theory of deviant behavior. The relationship of social control to deviance, from purely reciprocal societal reactions to deviance to social control as an independent or "causal" variable of various forms of individual and social deviation, will be explored.





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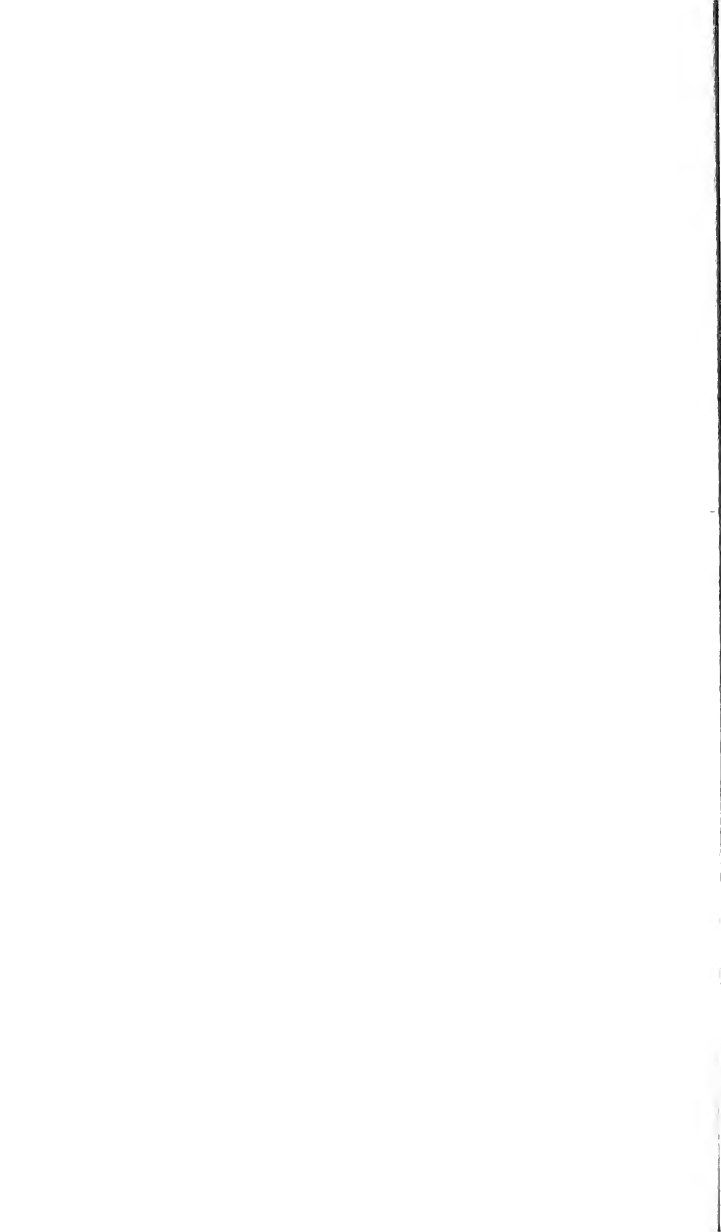
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NORTHEASTERN UNIVERSITY 1975-76  
BOSTON-BOUVÉ COLLEGE GRADUATE SCHOOL





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ACCREDITED MEMBER

Northeastern University  
100 Dockser Hall  
Boston, Massachusetts 02115  
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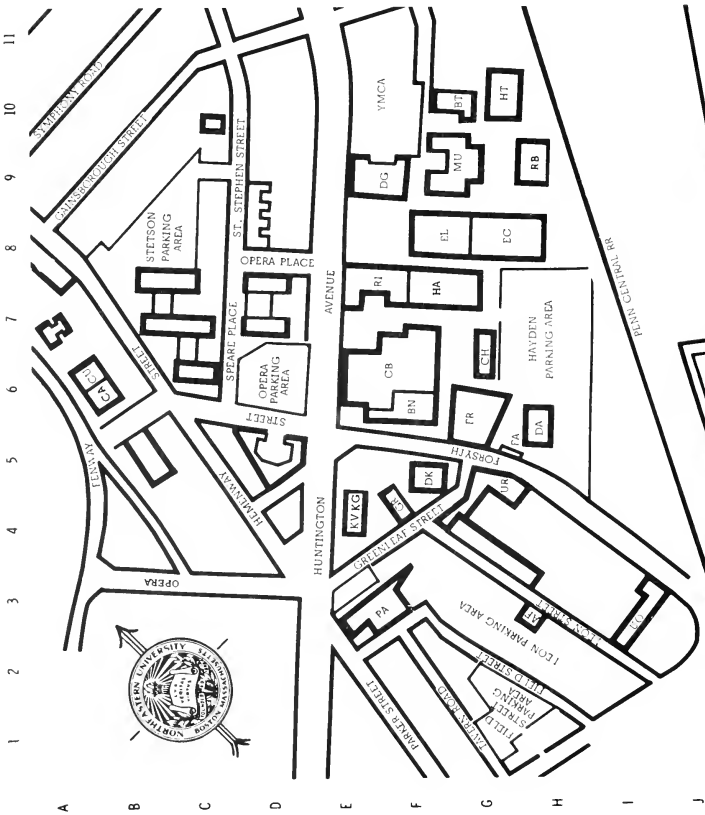
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| Building | Designation                              |
|----------|--|
| BN       | Bartlett Natatorium                      |
| BT       | Botolph Building                         |
| CB       | Cabot Physical Education Ctr.            |
| CH       | Churchill Hall                           |
| CU       | Cushing Hall                             |
| DA       | Dana Research Center                     |
| DK       | Dockser Hall                             |
| DG       | Dodge Library                            |
| EC       | Ell Student Center and Alumni Auditorium |
| EL       | Forsyth Building                         |
| FR       | Forsyth Building Annex                   |
| FA       | Greenleaf Building                       |
| GR       | Hayden Hall                              |
| HA       | Hurtig Hall                              |
| HT       | Cahners Hall                             |
| CA       | Knowles Center (Volpe)                   |
| KV       | Knowles Center (Gryzmish)                |
| KG       | 11 Leon Street                           |
| UO       | African-American Institute               |
| AF       | Mugar Life Sciences Building             |
| MU       | Parker Building                          |
| PA       | Richards Hall                            |
| RI       | Robinson Hall                            |
| RB       | United Realty Building                   |
| UR       |  |

# MAP REFERENCE

|     |  |
|-----|--|
| F6  | Barletta Natatorium                      |
| F10 | Botolph Building                         |
| E6  | Cabot Physical Education Ctr.            |
| G7  | Churchill Hall                           |
| A6  | Cushing Hall                             |
| H6  | Dana Research Center                     |
| F5  | Dockser Hall                             |
| E9  | Dodge Library                            |
| G8  | Ell Student Center and Alumni Auditorium |
| F8  | Forsyth Building                         |
| G6  | Forsyth Building Annex                   |
| G5  | Greenleaf Building                       |
| F4  | Hayden Hall                              |
| F7  | Hurtig Hall                              |
| G10 | Cahners Hall                             |
| B6  | Knowles Center (Volpe)                   |
| E4  | Knowles Center (Gryzmish)                |
| E4  | 11 Leon Street                           |
| J3  | African-American Institute               |
| H3  | Mugar Life Sciences Building             |
| F9  | Parker Building                          |
| F3  | Richards Hall                            |
| E7  | Robinson Hall                            |
| H9  | United Realty Building                   |
| G5  |  |



## ACADEMIC CALENDAR 1975–1976

### Fall Quarter 1975

|                     |                   |             |
|---------------------|-------------------|-------------|
| Registration period |                   |             |
| Burlington          | Tuesday–Wednesday | Sept. 16–17 |
| Boston              | Monday–Thursday   | Sept. 22–25 |
| Classes begin       | Monday            | Sept. 29    |
| Examination period  | Monday–Saturday   | Dec. 15–20  |

### Winter Quarter 1975–1976

|                     |                 |            |
|---------------------|-----------------|------------|
| Registration period |                 |            |
| Burlington          | Tuesday         | Dec. 2     |
| Boston              | Monday–Thursday | Dec. 8–11  |
| Classes begin       | Monday          | Jan. 5     |
| Examination period  | Monday–Saturday | Mar. 22–27 |

### Spring Quarter 1976

|  |                 |            |
|--|-----------------|------------|
| Registration period  |                 |            |
| Burlington   | Tuesday         | Mar. 9     |
| Boston   | Monday–Thursday | Mar. 15–18 |
| Classes begin  | Monday          | Apr. 5     |
| Last day to file card for<br>Spring Commencement             | Thursday        | Apr. 1     |
| Last day to pay fee for<br>Spring Commencement               | Friday          | Apr. 30    |
| Final grades due in Registrar's<br>Office for June graduates | Friday          | June 4     |
| Examination period   | Monday–Saturday | June 14–19 |
| Spring Commencement  | Sunday          | June 20    |

### Summer Quarter 1976

|  |                    |            |
|--|--------------------|------------|
| Registration period                            |                    |            |
| Burlington                                     | Monday–Tuesday     | June 14–15 |
| Boston   | Wednesday–Thursday | June 16–17 |
| Classes begin                                  | Monday             | June 28    |
| Last day to file card for<br>Fall Commencement | Thursday           | July 1     |
| Last day to pay fee for<br>Fall Commencement   | Monday             | Aug. 2     |
| Examination period                             | Wednesday–Thursday | Aug. 4–5   |

## **UNIVERSITY HOLIDAYS 1975-1976**

|                                    |                   |                |
|------------------------------------|-------------------|----------------|
| Columbus Day                       | Monday            | October 13     |
| Veterans' Day                      | Tuesday           | November 11    |
| Thanksgiving Recess                | Thursday-Saturday | November 27-29 |
| Christmas Vacation                 | Monday-Saturday   | Dec. 22-Jan. 3 |
| Martin Luther King Day             | Thursday          | January 15     |
| Washington's Birthday              | Monday            | February 16    |
| Patriot's Day                      | Monday            | April 19       |
| Memorial Day                       | Monday            | May 31         |
| Celebration of<br>Independence Day | Monday            | July 5         |
| Labor Day                          | Monday            | September 6    |

## **Equal Opportunity Policy**

Northeastern University is committed to a policy of providing equal opportunity for all. In all matters involving admission, registration, and all official relationships with students, including evaluation of academic performance, the University insists on a policy of nondiscrimination. Northeastern University is also an equal opportunity employer; it is institutional policy that there shall not be any discrimination against any employee or applicant for employment because of race, color, religion, sex, age, national origin, or physical or mental handicap. In addition, Northeastern takes affirmative action in the recruitment of students and employees.

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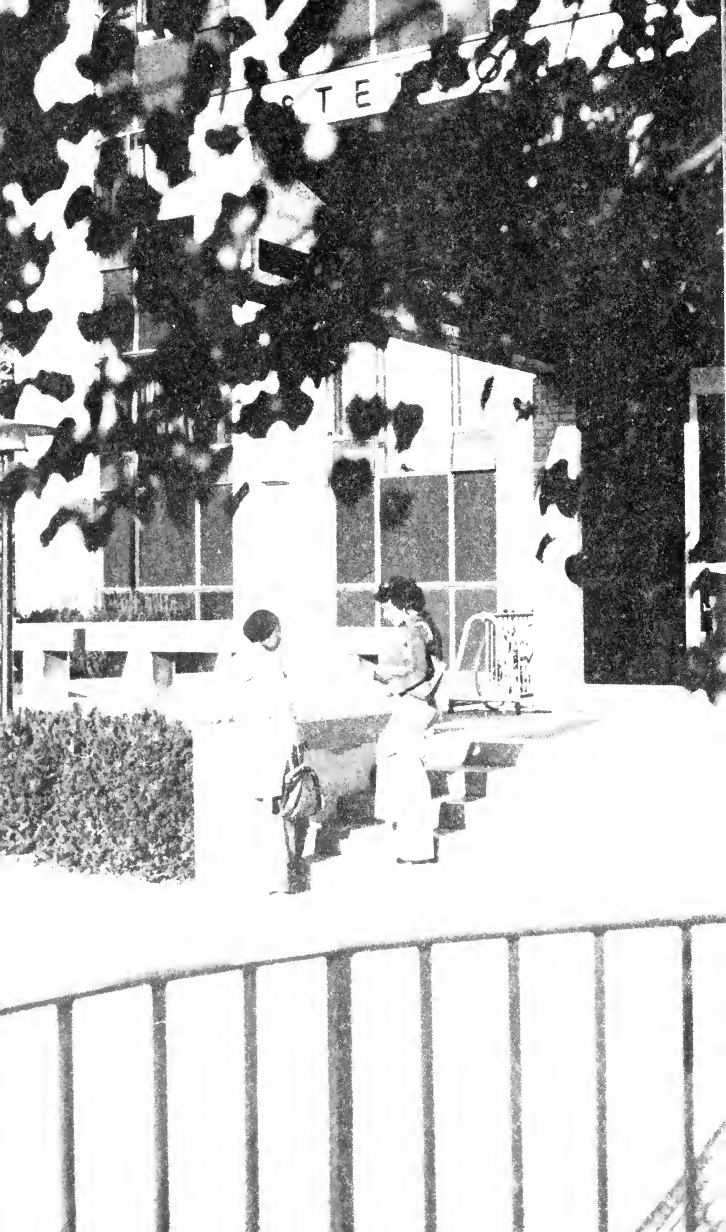
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# the university

Founded in 1898, Northeastern University is incorporated as a privately endowed nonsectarian institution of higher learning under the General Laws of Massachusetts. The State Legislature by special enactment has given the University general degree-granting powers. The University is governed by a Board of Trustees elected by and from the Northeastern University Corporation, which is composed of nearly 180 distinguished business and professional men and women.

From its beginning, Northeastern University has had as its dominant purpose the discovery of community educational needs and the meeting of these in distinctive and serviceable ways. The University has not duplicated the programs of other institutions, but has sought to pioneer new areas of educational service.

A distinctive feature of Northeastern University is its Cooperative Plan, initiated by the college of Engineering in 1909 and subsequently adopted by the Colleges of Business Administration (1922), Liberal Arts (1935), Education (1953), Pharmacy (1962), Nursing (1964); Boston-Bouv   College (1964); the College of Criminal Justice (1967); and by Lincoln College's daytime Bachelor of Engineering Technology program (1971). This educational method enables students to gain valuable practical experience as an integral part of their college program and also provides the means by which they may contribute substantially to the financing of their education. The Plan has been extended to the graduate level in engineering, actuarial science, rehabilitation administration, professional accounting, business administration, and law.

In the field of adult education, programs of study have been developed to meet a variety of needs. University College offers evening courses — offered by the University since 1906 — and adult-day courses leading to the bachelor's degree. In addition to offering day undergraduate programs in Electrical Engineering Technology and Mechanical Engineering Technology, Lincoln College offers evening/part-time certificate, associate, and bachelor degree programs in technological areas. All formal courses of study leading to degrees through part-time programs are approved by the Basic College faculties concerned.

## **GRADUATE AND PROFESSIONAL SCHOOLS**

The 10 graduate and professional schools of the University offer day and evening programs leading to the degrees listed.

The Graduate School of Actuarial Science offers the degree of Master of Science in Actuarial Science.

The Graduate School of Arts and Sciences offers the degrees of Master of Arts, Master of Science, Master of Science in Health Science, Master of Public Administration, and Doctor of Philosophy.

The Graduate School of Boston-Bouvé College offers the degree of Master of Science, with specialization in Physical Education and Recreation Education.

The Graduate School of Business Administration offers the degree of Master of Business Administration.

The Graduate Program in Criminal Justice offers the degree of Master of Science.

The Graduate School of Education offers the degrees of Master of Education and Doctor of Education and the Certificate of Advanced Graduate Study.

The Graduate School of Engineering offers the degrees of Master of Science, Engineer degree, Doctor of Engineering, and Doctor of Philosophy.

The School of Law offers the degree of Juris Doctor.

The Graduate School of Pharmacy and Allied Health Professions offers the degrees of Master of Science and Doctor of Philosophy.

The Graduate School of Professional Accounting offers the degree of Master of Science in Accounting.

## **CENTER FOR CONTINUING EDUCATION**

The Center for Continuing Education was established in 1960 to relate the University to the needs of its community in a period of accelerated change. Adult education programs offered by the Center and University College have since been consolidated. Its programs are composed of seminars, conferences, institutes, forums, and a wide variety of special courses designed to serve specific needs. The Division of Special Programs, working cooperatively with trade associations and professional societies, offers a wide variety of programs dealing with current needs and problems. Through its Division of Community Services, working with governmental agencies and community organizations, the Center is becoming increasingly involved in social problems on both the local and national level.

Many of these programs are conducted at Henderson House, Northeastern University's conference center in Weston, Massachusetts.

### **RESEARCH ACTIVITIES**

The facilities of the University are engaged in a wide variety of basic research projects in business, science, social science, pharmacy, and engineering. These are coordinated by the Dean of Research, whose services are University-wide and available to the faculties of all the Colleges.

Although Northeastern is primarily concerned with undergraduate and graduate instruction, the University believes that the most effective teaching and learning take place in an environment characterized by research activities directed toward extending the frontiers of knowledge.

# buildings and facilities

## MAIN CAMPUS

The main campus of Northeastern University is located at 360 Huntington Avenue in the Back Bay section of Boston. Many of the city's famous cultural, educational, and philanthropic institutions are situated in the Back Bay, including the Museum of Fine Arts, Symphony Hall, Horticultural Hall, the Isabella Stewart Gardner Museum, the Harvard teaching hospitals, the Boston Public Library, and many schools and colleges. Most are within walking distance of Northeastern University.

Major transportation facilities serving the Boston area are Logan International Airport, two rail terminals, bus terminals serving inter- and intrastate lines, and MBTA subway-bus service within the metropolitan-suburban area. There is a subway stop in front of the campus. For motorists, the best routes to the campus are the Massachusetts Turnpike (Exit 22) and Route 9, of which Huntington Avenue is the intown section.

The campus of 48 acres is divided by Huntington Avenue, with the main educational buildings on one side and dormitories on the other. The principal buildings, all of which have been constructed since 1938, are of glazed brick in contemporary classic style. Most are interconnected by underground passageways.

## Ell Student Center

The Carl S. Ell Student Center provides facilities for student recreation and for extracurricular activities. The Alumni Auditorium, with a seating capacity of 1,300, is part of the Center. Also included are special drama facilities, a ballroom, main lounge, fine arts exhibition area, student offices, conference rooms, and a dining area seating more than 1,000.

## Libraries

The University library system consists of the Dodge Library, which is the main library; the Suburban Campus Library at Burlington; the School of Law Library; and divisional libraries for Physics and Electrical Engi-

neering, Chemistry and Biology, Mathematics and Psychology, and Health, Physical and Recreation Education, and Physical Therapy. There are additional subject collections for the Center for Management Development at Andover, Massachusetts, and the Marine Science Institute in Nahant.

The library collections number 360,000 volumes supplemented by some 267,000 titles in microprint, microfilm, and microfiche forms. The collection includes, in addition, some 3,500 periodical titles, 90,000 documents, and 4,600 sound recordings.

### **Cabot Physical Education Center**

The Godfrey Lowell Cabot Physical Education Center is one of the best equipped in New England. The large gymnasium contains four basketball courts. In addition, the Center consists of an athletic cage, a small gymnasium, and a rifle range, as well as administrative offices for the Department of Athletics and for the Physical Education Department of Boston-Bouv  College.

A recent addition to the Center, the Barletta Natatorium, houses a 105-foot swimming pool, a practice tank for the crew, handball courts, and shower and dressing facilities.

### **Dockser Hall**

Charles and Estelle Dockser Hall, the main Boston-Bouv  College building, completed in 1968, houses a large gymnasium, dance studio, motor performance laboratory, college library, community recreation laboratory, folk art center, dark and music rooms, recreation resources area, locker rooms, offices, classrooms, conference room and lounge, storage facilities, and a research laboratory.

### **Apartments for Graduate Students**

The University maintains a 100-apartment housing unit which accommodates 279 people. Two-, three-, and four-party apartments are available which vary in size from two to four rooms plus bath. Apartments are furnished with beds, chairs, desks, stove, refrigerator, and kitchen table. The cost includes all utilities.

A \$50 deposit is required when making application for the apartments. Applications are available in the Office of University Housing. Students are expected to make such arrangements on a term-to-term basis but may live in the apartments both while on cooperative work assignments and in school if they wish. All reservations are made on a first come, first served basis.

## **SUBURBAN FACILITIES**

### **Suburban Campus**

The Suburban Campus, located near the junction of Routes 128 and 3 in Burlington, Massachusetts, was established to meet the needs of individuals and of industry in the area.

In addition to graduate courses in engineering, physics, mathematics, business administration, science, education, and the arts, portions of undergraduate programs leading to the associate and bachelor's degrees, special programs for adults, and noncredit state-of-the-art programs are offered.

### **Warren Center**

The Warren Center is a practical laboratory for Boston-Bouvé College in outdoor education and conservation, in group practicum, and in camping administration, programming, and counseling. At this Center in Ashland, completed in 1967, there are tennis courts, field hockey and lacrosse fields, waterfront for swimming and boating, overnight camp sites, fields and forests, heated cottages, the Hayden Lodge with a recreation hall, library, crafts shop, dining facilities, and conference accommodations.

### **Henderson House**

The University's conference center, Henderson House, is located in Weston, Massachusetts. The Center for Continuing Education conducts short-term courses, seminars, and special institutes for business, professional, and research groups. Henderson House is 12 miles from the main campus.

### **Marine Science Institute**

The Marine Science Institute at Nahant, Massachusetts, is a research and instructional facility primarily engaged in studies of marine biology and oceanography. The Institute is operated all year, and is about 20 miles northeast of Boston. Many of the courses at this institute are applicable toward an advanced degree in biology or health science.

### **Government Center Campus**

With the cooperation of the Federal Executive Board, the Graduate School of Liberal Arts' Department of Political Science offers an entire Master of Public Administration program at the John F. Kennedy Building in downtown Boston. This program is primarily for individuals employed in Federal, state, or local civil services.

**Brockton, Nashua, and Framingham Campuses**

For students residing in southeastern Massachusetts and northeastern Rhode Island, the Graduate School of Business Administration offers a significant portion of its M.B.A. Program at facilities in Brockton, Massachusetts. These facilities, made available by the Knapp Corporation, are located on West Chestnut Street in Brockton.

Students residing in the southern New Hampshire area may take a significant portion of the M.B.A. Program at facilities in Nashua, New Hampshire. These facilities are furnished by Sanders Associates, Inc. and are located in their headquarters on Route 3, just over the Massachusetts line.

For students in the Framingham-Worcester area, a significant portion of the M.B.A. Program may be taken at classroom facilities located in Framingham, Massachusetts.

# **boston-bouvé college graduate school**

The purposes of advanced study in Boston-Bouvé College are consistent with the philosophy of Northeastern University, and with the goals of advanced study in the professions. The programs are designed to fulfill the needs and interests of personnel in health, physical and recreation education and physical therapy in an era of social and educational change and redirection.

Graduate study is founded in the fields of knowledge and specialization which are extensively explored in upper-division or upper-class years of undergraduate preparation. The nature of advanced study leading to the master's degree demands of students and faculty attitudes of intensive critical analysis; cognitive development of idea and thought reliably tested in scholarly search and discussion, with application involving educational resources and practice; specialized research and creative experimentation in emerging theories, with application in the primary specialized field and its ancillary contexts; exploration and development of new trends in curriculum theory, process, and evaluation; critiques of professional reading and related literature; conversance with diverse methods and interpretation of scientific, philosophic, historical, and descriptive research; and a depth study using the appropriate research method in an approved investigation or thesis/project under faculty advisement.

The goals of graduate education in Boston-Bouvé College are:

1. To provide advanced preparation for administrators, supervisors, therapists, teachers, recreation specialists, coaches, and researchers through specific professional study and interdisciplinary experience.
2. To develop appreciation for the orderly approach to discovery through research, philosophical thought, and discussion.
3. To provide a sound basis for research and to facilitate student research experiences and applications.
4. To contribute to the development and refinement of dance, games, sports, recreation, and outdoor education within their cultural settings, and through comparative study.
5. To develop leaders and teachers capable of designing current and innovative approaches to learning and curriculum development.



6. To encourage intensive study in a specialized area of concern, with awareness of problems in education and society.
7. To provide a foundation for advanced study at the doctoral level.

### **PART-TIME STUDY**

Graduate programs in Boston-Bouvé Colleges are structured to provide an opportunity for the master's degree candidate to attend classes in the late afternoon or evening while continuing his/her full-time employment. By judicious use of electives and independent study, an unemployed student may carry the equivalent of a full-time course load.

Students normally take one or two courses per quarter and can complete the degree program in two to three years, depending upon whether or not course work is taken during the summer quarter.

Students maintaining a satisfactory academic standing may petition the Director of the Graduate School for permission to take more than two courses per quarter.

### **GENERAL REGULATIONS**

The general regulations and minimum requirements for all graduate programs are established by the Northeastern University Graduate Council. In some matters the committee of each graduate school is allowed discretion to establish regulations within limits defined by the Council. The regulations and academic requirements which follow have been formulated in accordance with this general policy.

#### **Application**

All applicants should address inquiries to Boston-Bouvé College Graduate School. Application forms and information will be mailed promptly.

#### **Registration**

Students must register within the period listed on the school calendar. Registration will not be permitted after this period.

#### **Residence**

All work for advanced degrees must be completed in residence at the University, unless approval has been obtained from the Director of the Boston-Bouvé College Graduate School for work taken elsewhere. Students who are in residence and using the facilities of the University must register for such work.

#### **Grading System**

The performance of students in graduate courses is recorded by the instructor, using the following grades:

A Excellent

For performance of high graduate caliber

**B Satisfactory**

For performance at a satisfactory level

**C Fair**

For performance not at the level expected in graduate work

**F Failure**

For unsatisfactory performance

In addition, the following letter designations are used:

**I Incomplete**

For failure to complete course work

**S Satisfactory without quality designation**

For satisfactory completion of course work

**U Unsatisfactory without quality designation**

The grades S and U are used for the first quarter of a two-quarter sequence in which the second-quarter grade applies to both the first and second quarters of the sequence: e.g., Thesis I and II.

The designation I is to be changed to a grade upon removal of the deficiencies which caused the I to be reported. Deficiencies must be removed within the quarter following that for which the I is received, unless an extension of time is granted by the instructor. However, such extension of time may not exceed two additional consecutive calendar quarters. Grades of Incomplete received in Thesis I and II may be continued beyond the two-quarters' limit, but must be removed prior to graduation and within the six-year time limitation.

Any student who wishes to take a make-up examination must obtain permission from the Director of Boston-Bouvé College Graduate School by the second week of the quarter succeeding that in which the examination is missed. The make-up examination must be taken in that succeeding quarter unless circumstances warrant permission from the Director to defer it to the second succeeding quarter.

### **Class Hours and Credits**

All credits at Northeastern University are entered as quarter-hour credits, with a quarter hour of credit being equivalent to three-fourths of a semester hour, i.e., 12 semester hours are equal to 16 quarter hours.

All classes in the Boston-Bouvé College Graduate School meet on a quarter basis, with an academic quarter defined as a term of approximately 12 weeks' duration. In the summer quarter, classes meet in a quarter of six weeks' duration. The academic calendar in the front of this bulletin should be consulted to determine the opening dates of each quarter.

### **Continuity of Program**

Students are expected to maintain continuous progress toward a degree. Any student who does not attend Northeastern for a period of one year must apply for readmission.

### **Withdrawals**

In order to withdraw from a course, a student must fill out an official withdrawal form obtained at the Registrar's Office or at the Burlington Campus. Withdrawals may be made through the ninth class meeting of the quarter. Students will be withdrawn as of the date on which they complete the form. Ceasing to attend a class or notifying the instructor does not constitute an official withdrawal. Petitions for withdrawal from a course after the ninth class meeting of the quarter must be submitted to the Director of the Graduate School, and may be approved to avert unusual hardships on the student.

Students who do not attend the first two sessions will be dropped from the class unless they notify the Registrar of their intention not to withdraw.

### **Changes in Requirements**

The continuing development of the Graduate School forces frequent revision of curricula. In every new bulletin, some improvements are indicated. When changes impose no hardship on the student and school facilities permit, the student is expected to meet the requirements of the latest bulletin. If the student finds it impossible to meet these requirements, the bulletin for the year in which he entered becomes the binding one.

### **Application for the Diploma**

If a commencement card is not filed with the Registrar's Office on or before the applicable date listed on the calendar, there is no assurance that the degree will be granted in that particular year, even though all other requirements have been fulfilled.

## **THE MASTER OF SCIENCE DEGREE**

### **Admission to Degree Candidacy**

For admission to the Boston-Bouvé College Graduate School, a degree candidate must have presented the following to the Director of the Graduate School:

1. A completed application and \$15 application fee.

2. Official transcript(s) from accredited institution(s) as evidence of successful completion of the baccalaureate degree. The transcript(s) should show a cumulative average of 2.5 or better and a minimum of 18 semester hours or 24 quarter hours of work in the student's proposed major or the equivalent in professional background.
3. Record of an interview with the Director of the Boston-Bouvé Graduate School or her designate. This requirement may be waived for out-of-state applicants.
4. Three references from persons familiar with the applicant's professional, academic, and character background.
5. An official record of the Miller Analogies Test score.

It is recommended that all materials be on file in the office of Boston-Bouvé College Graduate School at the time of the initial interview. In no case will a conference and course registration be permitted without a minimum of a completed application and a copy of the undergraduate transcript. The additional materials—the Miller Analogies Test score and references—must be received not later than the end of the sixth week of the first quarter.

### **Academic Classifications**

Students whose materials meet the criteria above are classified as regular students.

Students whose materials do not qualify them for enrollment as regular students may be accepted as provisional students. Provisional students must obtain a B average in the first 12 quarter hours of credit at Northeastern University in order to continue the graduate program.

The Director of Boston-Bouvé College Graduate School may admit any person as a special student who presents evidence of a bachelor's degree and who appears otherwise prepared to undertake study in the Graduate School. Admission is on the provision that the applicant: a) files an application and b) acknowledges that subsequent to being reclassified as a degree candidate, only 12 quarter hours of academic credit earned as a special student may be applied toward a degree.

### **Academic Requirements**

A candidate for the master's degree must complete an approved program conforming to requirements of the department in which the candidate is registered. At the discretion of the Graduate Committee, any student whose record is not satisfactory may be dropped from the program. A minimum of 48 quarter hours of correlated, graduate-caliber

work, along with other study required by the department, must be completed.

An average grade of at least B must be obtained in the quarter hours of credit required for the degree, excluding any transfer credits. Not more than eight quarter hours of extra or repeated courses are allowed to satisfy grade requirements for the degree.

Within the above limitations, a required course for which a grade of F is received must be repeated with a grade of C or better, and may be repeated only once. If a grade of F is received in an elective course, that course may be repeated once to obtain a grade of C or better, or another elective course may be submitted. If a grade of C is received in a required course, that course may be repeated once to obtain a grade of B or better.

A degree candidate's record is subject to review by the Boston-Bouvé College Graduate Committee upon completion of his/her sixth course at Northeastern University. At this time, the student must have made reasonable progress in achieving his/her program objectives, and have obtained at least a B average. If the requirements are met, he/she is encouraged to continue the program. In the event his/her record is unsatisfactory, he/she may be dropped as a degree candidate from the Boston-Bouvé College Graduate School.

### **Program Selection**

Upon acceptance as a degree candidate, the student is assigned to a program adviser in his/her major area of concentration. In consultation with his/her adviser, the student develops a program of study, including program objectives, anticipated courses, and estimated dates for completion of the various degree requirements. Prior to completion of the first 12 quarter hours of credit, the program requires approval by the Boston-Bouvé College Graduate Committee. Any subsequent changes in program require further Committee approval.

### **Transfer Credits**

A maximum of 12 quarter hours of credit obtained at another institution is accepted toward the master's degree, provided that the credits are recommended for transfer by the student's program adviser; consist of work taken at the graduate level for graduate credit; carry grades of A or B; have been earned at a recognized institution; and have not been used toward any other degree. Students should petition the Director of the Graduate School in writing for all transfer credit, completing the necessary form obtainable from either the office of Boston-Bouvé College or the faculty program adviser. This form should be submitted to

the student's program adviser along with an official transcript and a course description. Grades on transfer credits may not be used in obtaining the academic average necessary for completion of degree requirements.

### **Time Limitations**

Course credits earned in the graduate study program or accepted by transfer are valid for a maximum of six years from the date of course completion unless an extension is granted by the College Graduate Committee.

### **Comprehensive Examination**

A comprehensive subject-matter examination is taken by each candidate no later than two weeks before his commencement. This examination may be taken when the candidate has completed at least three-fourths of the designated course work, and received consent of his program adviser. The comprehensive examination is prepared by selected graduate faculty with whom the student has studied. The areas to be tested are commensurate with the student's specialization, area of concentration, and core subject matter appropriate to his professional field. The program adviser makes arrangements for the preparation of the test. Faculty members preparing the examination assume responsibility for its reading and grading, and for informing the adviser of results. Test results are reported by the program adviser to the Director of the Boston-Bouvé College Graduate School.

Each section of the examination is graded on the basis of A, B, C, or F. The candidate's total grade must average to the grade of B. Grades of F are not acceptable. A student failing all or part of the examination may, upon the recommendation of his adviser, be given one re-examination. Conditions governing re-examination are determined by the Director of the Graduate School or an appropriate designate.

### **Thesis/Project**

Each candidate must submit a thesis or project which clearly exhibits his/her research ability, and is designed to increase the scope of his/her individual specialization. The proposal is submitted to the program advisor for approval. Upon initial approval, an advisor and two additional committee members are appointed by the Director of the Graduate School at the recommendation of the program advisor. The thesis or project proposal and completed document must be approved by the thesis/project committee and the Director of the Graduate School.

# financial information

## FINANCIAL OBLIGATIONS

### Tuition

Tuition rates and fees are subject to revision by the Board of Trustees at any time. However, any change in tuition and fees will become effective at the beginning of the school year which follows the one in which the change was announced. Tuition for master's degree candidates and special students is \$49 per quarter hour of credit.

Tuition statements are mailed to students by the Bursar's Office and are payable by check to Northeastern University on or before the date specified.

### Fees

All applications must be accompanied by a nonrefundable application fee of \$15. No application will be processed until the fee has been received by the Graduate School of Boston-Bouv  College. Checks should be made payable to Northeastern University and sent, with the application, to Director of Graduate School, 100 Dockser Hall.

Other fees include a charge of \$10 for late payment of tuition; a fee of \$2 for deferred tuition (with approval of Bursar); a final examination make-up fee of \$5; and a fee of \$25 for all degree candidates, payable before commencement by the applicable date listed on the academic calendar.

All part-time students on the Huntington Avenue Campus are charged \$ .75 a quarter for the services available in the Student Center.

All financial obligations to the University must be discharged by graduation.

### Refunds

Tuition refunds are granted only on the basis of the date appearing on the official withdrawal form filed by the student. Non-attendance does not constitute official withdrawal. Questions regarding refunds should be discussed with the Bursar's Office.

Refunds will be granted in accordance with the following schedule:

| Official Withdrawal Filed Within: | Percentage of Tuition Refunded: |
|-----------------------------------|---------------------------------|
| First week of quarter             | 100                             |
| Second week                       | 75                              |
| Third week                        | 50                              |
| Fourth week                       | 25                              |

## **FINANCIAL AID**

There is a limited amount of financial aid for part-time students enrolled in Boston-Bouvé College Graduate School. Graduate assistantship and/or fellowships in the College are not available to part-time students. There are a limited number of teaching assistantships available to qualified full-time graduate students. Assigned duties require 18–20 hours per week for which the student receives a \$2,600 stipend and tuition waiver. Further information and applications may be obtained from the Boston-Bouvé College Graduate Office.

### **Martin Luther King, Jr., Scholarships**

Established in 1969 in memory of the late Rev. Martin Luther King, Jr. Awards are made as openings occur to qualified minority graduate students who show financial need and are accepted to full-time study in the graduate schools of the University. Stipends will cover tuition and all fees.

### **Dormitory Proctorships**

A number of proctorships in men's dormitories on or near the Huntington Avenue Campus are available each year. Appointments carry a minimum compensation of room and board. Further information and application forms may be obtained from the Office of University Housing.

### **National Direct Student Loan**

This program is available to students who are carrying at least one-half the normal academic work load, are accepted as degree candidates, and who show evidence of financial need.

The Federal maximum which a graduate student may borrow while pursuing a post-baccalaureate degree is \$5,000.

Repayment and interest on these loans do not begin until nine months after the student ceases to carry at least a half-time academic load at an institution of higher education. The repayment of principal may be extended over a 10-year period with the interest at the rate of three percent per annum. Repayment may be deferred up to a total of three years while a borrower is serving as a Peace Corps or VISTA volunteer.



**Guaranteed Student Loan Program**

Under this program, students who are matriculated degree candidates, enrolled for at least one-half the normal academic work load, may borrow from a participating bank or other financial institution. Terms and conditions vary from state to state, but a student generally may borrow up to \$1,500 a year (the law allows a maximum of \$2,500 per year) depending on financial need. The Federal government pays the interest while the student is in school if the student is eligible for interest subsidy.

The student must have submitted, through the College Scholarship Service, a Parents' Confidential Statement; or if he has been declared financially independent by the Financial Aid Office, a Student's Confidential Statement. These forms are available in the Financial Aid Office.

Applications for the loan itself are available from local banks or the Education Office of your state government. Additional information and necessary application forms for Massachusetts residents are available from the Financial Aid Office.

# faculty

## GRADUATE TEACHING FACULTY OF BOSTON-BOUVÉ COLLEGE

Allen, Catherine L., B.S., M.A., Ed.D., Ph.D., *Dean of Boston-Bouvé College. Director of Boston-Bouvé College Graduate School, and Professor of Health, Physical Education and Recreation*

Christensen, Carl S., B.S., M.S., Ph.D., *Professor of Physical Education and Chairman of the Department*

Curtin, Robert S., B.S., M.Ed., *Assistant Professor of Physical Education*

Fox, John W., A.B., M.A., Ed.D., *Professor of Physical Education*

Garman, Betty Gene, B.S., M.P.H., *Assistant Professor of Physical Therapy*

Garrity, H. Marie, B.S.Ed., Ed.M., Ed.D., *Professor of Health Education and Executive Officer of the Department*

Gillespie, William Jay, B.S., M.Ed., *Assistant Professor of Physical Education*

Jeffrey, Howard, A.B., M.A., D.R., *Associate Professor of Recreation Education*

Kassabian, Kerkor, B.S., Ed.M., *Associate Professor of Physical Education*

Lintner, Marie A., B.S., M.S., Ph.D., *Assistant Professor of Physical Education*

Luttgens, Kathryn, B.S., M.S., Ph.D., *Professor of Physical Education*

McCay, Albert H., B.A., M.A., Ed.D., *Professor of Recreation Education and Chairman of the Department*

Morrison, Richard, B.A., M.S., Ed.D., *Associate Professor of Recreation Education*

Neilson, Elizabeth, B.S., M.Ed., Ed.D., *Adjunct Professor of Health Education*

Philbrick, Barbara, B.A., M.S.Ed., Ph.D., *Associate Professor of Physical Education*

Robinson, Frank, B.A., M.S., *Associate Professor of Recreation Education*

Robinson, Sarah, B.S., M.S., Ph.D., *Associate Professor of Physical Education*

Rowlands, Jeanne L., B.A., B.S., M.A., *Professor of Physical Education*

Sayed, Alae-Eldin, B.S., M.S., Ed.D., *Assistant Professor of Recreation Education*

Van Slyck, Elizabeth W., B.S., M.A., *Professor of Physical Therapy and Executive Officer of the Department*

Zobel, Richard C., B.S., M.A., Ed.D., *Professor of Physical Education*

# fields of study

## PROGRAMS IN PROFESSIONAL SPECIALIZATIONS

### Master of Science

#### Description

All students must complete one of the programs as outlined in the following pages. In almost all cases the sequence is designed to be very flexible. Any variations or changes must have the prior recommendation of the student's program adviser and approval of the Boston-Bouvé College Graduate School Director.

#### Core Courses Required of All Candidates

- 50.841 Introduction to Educational Statistics
- 66.802 Research Design and Methodology
- 66.890 Thesis/Project I
- 66.891 Thesis/Project II

Competency, as demonstrated by the successful completion of a proficiency examination, is accepted in lieu of Statistics and/or Research Design. The candidate must petition the Director of Boston-Bouvé College Graduate School for permission to attempt the proficiency examination. An elective course must be substituted for a core course which has been waived.

#### Specialization in Physical Education

For a specialization in Physical Education, 20 quarter hours of departmental courses are required. Eight quarter hours are selected from foundation courses taken within Boston-Bouvé College and 12 quarter hours from one of the four areas of concentration. In addition, 12 quarter hours of free elective courses appropriate to the student's program are selected from within Boston-Bouvé College or from other Colleges at Northeastern University. Foundation electives, areas of concentration, and the courses therein follow.

#### Foundation Electives within Boston-Bouvé College

- 62.870 Philosophies in Physical Education
- 62.872 Comparative Physical Education

- 66.874 Seminar in Issues and Trends in Health Education and Physical Education
- 66.886 Critical Thinking and Evaluation in Health Education, Physical Education and Recreation Education.

#### Areas of Concentration

##### Area I — Administration and Supervision

- 62.810 Administration of Physical Education and Athletics
- 66.814 Supervision of Professional Personnel
- 62.822 Problems in Contemporary Athletics for Men and Women
- 66.805 Planning and Developing Facilities for Physical Education and Recreation

##### Area II — Curriculum and Instruction

- 62.830 Curriculum Development in Physical Education
- 62.833 Applied Evaluation in Curriculum and Instruction
- 62.835 Seminar in Curriculum and Instruction
- 62.840 Advances in Instructional Concepts
- 62.842 Physical Education for Students with Special Needs
- 62.884 Movement and the Learning Process

##### Area III — Development and Learning in Movement and Perception

- 62.842 Physical Education for Students with Special Needs
- 62.860 Early Childhood Movement Patterns
- 62.864 Perceptual Motor Development
- 62.884 Movement and the Learning Process
- 66.894 Independent Study
- Selected Interdisciplinary Courses or Movement Education Laboratory

##### Area IV — Sports Medicine (non-clinical)

- 62.851 Anatomic Kinesiology
- 62.852 Mechanical Analysis of Sport
- 62.854 Physical Fitness Appraisal and Guidance
- 62.857 Trauma Diagnosis and Treatment in Sport
- 62.859 Rehabilitation from Injury in Sport
- 62.880 Sociology of Sport
- 62.882 Psychology of Coaching and Sport

#### Specialization in Recreation Education

To specialize in Recreation Education, four quarter hours of departmental course work are required. Each candidate is registered for either 63.812, Seminar in Contemporary Issues and Problems in Recreation Services or 63.830, Advanced Organization and Administration of Recreation Services. In addition, seven courses (28 quarter hours) appropriate to the student's needs and professional objectives are selected from the following list:

Community Recreation

- 63.834 Programs in Recreation
- 63.840 Politics and Bureaucracy in Recreation
- 63.842 Recreation and the Community School — Concepts and Practices
- 63.844 Leisure and Delinquent Behavior
- 63.805 Program Evaluation in Recreation

Therapeutic Recreation

- 63.850 Therapeutic Recreation Services for Special Populations
- 63.852 Seminar on Programming in Therapeutic Recreation
- 63.854 Observation of Recreation Services in Treatment Settings

Outdoor Education

- 63.824 School Camping
- 63.826 Administration of Resident Camp Programs

General Recreation Courses

- 63.813 Practicum in Clinical Recreation
- 63.816 Budgeting Systems
- 63.836 Public Relations in Recreation Agencies
- 66.805 Planning and Developing Facilities for Physical Education and Recreation
- 66.894 Independent Study
- Selected Interdisciplinary Courses

**Electives Offered by Boston-Bouvé College**

- 66.899 Seminar/Workshop
- 66.901 Health Issues: Implications for Education
- 66.902 Toward Accountable Health Curriculum
- 66.903 Teaching Strategies: School and Community Health Education
- 66.904 Contemporary World Health
- 66.905 Environmental Health
- 66.906 Consumer Health

# **courses**

## **DESCRIPTION OF COURSES**

All courses carry four quarter hours of credit unless otherwise indicated. Please see the current brochure for summer, fall, winter, and spring quarter course offerings.

### **PHYSICAL EDUCATION**

#### **62.810 Administration of Physical Education and Athletics**

Physical education and athletics discussed as an entity consistent with the current emphasis on unity, economy, and equal opportunity. Modern practices and principles of general administration applied to problems of staffing, scheduling, budgeting, collective bargaining, personnel welfare, program development, and public relations. All levels of education and the broad spectrum of programs common to physical education and athletics are considered.

#### **62.822 Problems in Contemporary Athletics for Men and Women**

Current problems, practices, and national issues pertinent to the conduct of athletic competition. National, state, and conference organizations are studied.

#### **62.830 Curriculum Development in Physical Education**

The foundations of curriculum theory, research, practice, and evaluation in American education with specific application to health and physical education. Emphasis is placed on the processes of curriculum design and implementation in school settings.

#### **62.833 Applied Evaluation in Curriculum and Instruction**

Application of current educational evaluation theory to concepts of instruction and curriculum development in health and physical education. Includes formative and summative measures applied to the improvement of instruction, assessment of process and product in the educational program, interaction analysis. *Prep. 62.830 or 66.902.*

**62.835 Seminar in Curriculum and Instruction**

Problems of special interest in instructional theory, curriculum theory, and applied evaluation theory. Practical papers and class presentations emphasize scholarship in the solution of problems or issues in health, physical education, or recreation. *Prep. one course from the Curriculum and Instruction concentration in health or physical education; or, 63.834.*

**62.840 Advances in Instructional Concepts**

Current practices in and a search for new approaches to instruction in physical education. Includes analysis of teaching and learning styles, available instructional technology and the implementation of instructional designs in health and physical education classes.

**62.842 Physical Education for Students with Special Needs**

Assessment, planning, instruction and evaluation practices recommended for work with special needs in physical education classes. The role of the physical educator in the resource program is explored.

**62.851 Anatomic Kinesiology**

A study of the human musculo-skeletal system and its relationship to human movement patterns. Electromyography is used in assessing muscle-movement relationships. Current electromyographic research and techniques are investigated.

**62.852 Mechanical Analysis of Sport**

Application of mechanics of motion to the analysis of human motion. Emphasis is placed on cinematography and film analysis procedures in teaching and research. *Prep. 62.851, Anatomic Kinesiology or permission of instructor.*

**62.854 Physical Fitness Appraisal and Guidance**

Physical fitness screening tests and procedures, developmental and rehabilitation programs, fitness-producing activities, and current trends in testing and research. *Prep. Exercise Physiology and Measurement and Evaluation, or permission of instructor.*

**62.857 Trauma Diagnosis and Treatment in Sport**

An investigation of injury pathology, evaluative testing, diagnosis, and appropriate treatment modalities. *Prep. undergraduate Athletic Training or experience.*

**62.859 Rehabilitation from Injury in Sport**

Rehabilitation procedures and techniques appropriate to the post-injury retraining of athletes. *Prep. Adapted Physical Education or permission of instructor.*

**62.860 Early Childhood Motor Patterns**

The sequential development of fundamental motor pattern from age zero to 10 years. How to observe youngsters in a movement situation and assess their motor patterns.

**62.864 Perceptual-Motor Development**

An overview of major theories of learning and perception as they apply to learning and refining motor skills. The interrelationships of movement behavior and perceptual-motor organization of vision, audition, proprioception, kinesthesia, and psycho-social effects are studied.

**62.870 Philosophies in Physical Education**

An exploration of major philosophies, past and present, and their influence on modern physical education. The student delineates his personal philosophy, explores philosophical analysis as a research technique, and reviews philosophical research. *Prep. Philosophy, Philosophy of Education, or permission of instructor.*

**62.872 Comparative Physical Education**

Both past and present philosophies and practices of national and international programs in physical education are compared. Historical analysis is introduced as a research technique.

**62.880 Sociology of Sport**

An analysis of the sociological principles and factors operative in the interaction between sport and society. Pertinent literature and research are reviewed. *Prep. General Sociology or permission of instructor.*

**62.882 Psychology of Coaching and Sport**

The psychodynamics of the athlete and the coach with particular reference to personality, maturation, motivation, learning, emotions, and perception. Individualized projects are required. *Prep. General Psychology or permission of instructor.*

**62.884 Movement and the Learning Process**

Major theories and research in learning and their application to learning motor skills. Perceptual-motor development and learning are examined;



the programs evolving in this area and their implications for the teaching-learning process of motor skills are presented. *Prep. Educational Psychology or permission of instructor.*

## RECREATION EDUCATION

### 63.805 Program Evaluation in Recreation

Comprehensive systems for evaluating program effectiveness studied as they relate to the consumer of recreation services. Major emphasis placed on developing an evaluation system for an agency of your choice. Case studies are drawn from the public, non-profit and commercial sectors.

### 63.813 Practicum on Clinical Recreation

A minimum of sixty (60) clock hours of supervised clinical experience, required of those students who do not have a degree in Recreation. Students are assigned to institutions that offer services in the area of therapeutic recreation and rehabilitation, community and municipal recreation, or outdoor recreation-education.

Waiving of such requirement may be granted, dependent on the student's background and experience. *Permission of adviser.*

### 63.816 Budgeting Systems

The rational and political aspects of budgeting studied as they relate to program analysis and policy formulation. Case studies are drawn from the public, non-profit, and commercial sectors.

### 63.824 School Camping

An independent study of the nature and conduct of outdoor recreation education as implemented in school camping programs. Problems investigated and methods developed under supervision of the faculty adviser and staff.

### 63.826 Administration of Resident Camp Programs

An in-depth study of staffing, sanitation and health; purchasing and storage of food, materials, equipment, and supplies; kitchen management; insurance, construction, and maintenance of buildings; and program areas as they affect resident camping programs. A study of nationwide goals and trends in the camping movement is included. This course is conducted at Warren Center, Ashland, Massachusetts, as an intensive, residential, one-week workshop during the March quarter interim.

**63.830 Advanced Organization and Administration of Recreation Services**

Patterns for the implementation of recreation service by school systems, voluntary agencies, national service organizations, municipal governments, and state and Federal agencies investigated in depth.

**63.834 Programs in Recreation**

An examination and evaluation of program content, leadership, administration, and facilities in recreation service, sponsored under public, private, religious, industrial, and voluntary auspices.

**63.836 Public Relations for Recreation Agencies**

The central purpose of public relations is to influence public opinion. This course focuses on practical and ethical aspects of public relations for recreation agencies. Case studies are drawn from the public, non-profit and commercial sectors.

**63.840 Politics and Bureaucracy in Recreation**

Practical problems faced by recreation professionals in public service are investigated. Students study relationships between elected officials, bureaucrats, peers, subordinates, and supervisors in state and local governments.

**63.842 Recreation and the Community School — Concepts and Practices**

The role of recreation as an integral part of programming for the community school. An analysis of the community school concept with regard to philosophy, physical plant requirements, personnel, finance, and community involvement.

**63.844 Leisure and Delinquent Behavior**

Recreation studied as an intervention strategy to prevent and rehabilitate delinquent behavior.

**63.850 Therapeutic Recreation Services for Special Populations**

A survey of the types of therapeutic recreation services. The type, nature, cause, and prognosis of different abnormalities are studied and the impact of the disabilities on the individual, his family and community, and the role of therapeutic recreation in general.

**63.852 Seminar on Programming in Therapeutic Recreation**

Principles, leadership and programs in therapeutic recreation for in-

dividuals with disabilities and handicapping conditions. Emphasis on choice, adaptation, and implementation of appropriate activities. *Prep. either 63.850 or 63.854.*

### **63.854 Observations of Therapeutic Recreation in Treatment Settings**

Guided observation sessions under professional supervision in various clinical settings. Group seminars are held to familiarize students as to the role of the rehabilitation team. *Prep. 63.850 or by permission of the instructor.*

## **INTERDEPARTMENTAL COURSES**

### **50.841 Introduction to Educational Statistics**

Basic statistical techniques such as measures of central tendency, variability, probability, correlation and regression, chi square, t test, and analysis of variance are covered. This course is conducted by the Graduate School of Education in the College of Education.

### **66.802 Research Design and Methodology**

Research methods and designs used in health education, physical education, and recreation education. Emphasis is placed on the development of competence in research techniques including the ability to: define research problems; write hypotheses; review and interpret literature; apply research designs; organize, analyze and present data; and draw relevant conclusions. *Prep. 50.841 or permission of instructor.*

### **66.805 Planning and Developing Facilities for Physical Education and Recreation**

The principles, terminology and standards for planning, construction and use of indoor and outdoor facilities for physical education and recreation. Integrated planning among all municipal departments is stressed.

### **66.814 Supervision of Professional Personnel**

A study of modern personnel management as applied to staff in Health, Physical Education, and Recreation. Emphasis on task analysis, personnel maturity for the task, leadership, and evaluative techniques.

### **66.874 Seminar in Issues and Trends in Health Education and Physical Education**

Analysis of current issues and trends in education with special attention to health and physical education, with emphasis on systematic and practical solutions, resolutions, and adaptations.

**66.886 Critical Thinking and Evaluation in Health Education, Physical Education and Recreation Education**

Investigation of the acquisition of knowledge in the three disciplines. Examination of the evaluation of knowledge and practice through experiences in decision-making, logical analysis, and critical thinking. Methods of evaluation research are introduced.

**66.890 Thesis/Project I**

Initiation of a scholarly investigation under the auspices of the appropriate department. A written research proposal submitted to and approved by the student's thesis committee. *A student must have the permission of his program adviser before registering for this course.*

**66.891 Thesis/Project II**

The investigation proposed in Thesis I implemented with and culminated in an approved written report in thesis form. In partial fulfillment of this requirement, the student attends a series of research seminars. Upon completion, the candidate presents his thesis/project orally before the College seminar group. *Eight quarter hours for Thesis/Project I and Thesis/Project II.*

**66.894 Independent Study**

Under the guidance and direction of his program adviser, each student develops and conducts a project related to his professional interest which includes: a statement of problem or purpose, hypothesis, an exhaustive review of literature, an appropriate research design, a standard investigating instrument or one of his own design, a small sample of the population subjected to investigation, presentation and discussion of results, and a statement of conclusions. The project is reported in thesis format when appropriate. (Credit arranged with program adviser.) *Prep. permission of program adviser.*

**66.899 Seminar/Workshop**

The College offers a special seminar or workshop from time to time in health, physical education, physical therapy, or recreation. Graduate credit may be granted for successful completion of a workshop, but credit may not be applied toward a degree program without the approval of the program adviser. All participants must be degree candidates in the Boston-Bouvé Graduate Program or must qualify, prior to registration, as special graduate students. Credit of one, two, three, or four quarter hours is determined by the workshop director. *Prep. permission of workshop director.*

**66.901 Health Issues: Implications for Education**

Identification and analysis of today's critical health issues. Increased educational involvement to fill the gap between current health knowledge and overt behavior.

**66.902 Toward Accountable Health Curriculum**

Exploration, assessment, and analysis of the professional team and selected health curriculum. Involvement of current educational philosophy to strengthen the ultimate goal of producing humane individuals by accountable health curriculum.

**66.903 Teaching Strategies: School and Community Health Education**

Essential contemporary strategies for achieving a humanizing base to reduce the time lag between relevant health information, action, values, and the modification of health behavior regarding school and community health education. Selected student projects in developing models for personal concerns.

**66.904 Contemporary World Health**

A survey of the state of the world's health, the progress which has been made, and the difficulties yet to be overcome. The importance of "partners in health," as compared to the solitary research worker, in reaching the current health needs. The contributions of WHO, UNESCO, UNICEF, and FAO.

**66.905 Environmental Health**

The study of some of the most serious problems facing mankind as people continue to pollute and ravage the environment. Student involvement in selected problem areas associated with air, water, and noise pollution; solid waste accumulation; and the use of pesticides and other pollutants.

**66.906 Consumer Health**

Analysis and evaluation of the concepts concerned with the careful selection of health products and services. Decision making relative to the selection of health products and services; evaluating advertising; quackery; protection against useless or dangerous products through consumer organizations as areas for student exploration and study projects.

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# **NORTHEASTERN UNIVERSITY BULLETIN**

August Issue

**NORTHEASTERN UNIVERSITY 1975-77  
UNIVERSITY COLLEGE**



**Part-Time Day and Evening  
Undergraduate Programs in:**  
business administration  
health-professions  
law enforcement  
liberal arts  
education  
therapeutic recreation services

**Northeastern University  
360 Huntington Avenue  
Boston, Massachusetts 02115  
(617) 437-2400**



**NEW ENGLAND  
ASSOCIATION  
OF SCHOOLS  
AND COLLEGES  
ACCREDITED MEMBERS**

# **NORTHEASTERN UNIVERSITY BULLETIN**

The Northeastern University Bulletin is issued at 360 Huntington Avenue, Boston, Massachusetts 02115, eight times a year: once in January, twice in August, once in September, once in October, twice in November and once in December. Second Class Postage paid at Boston, Massachusetts. Volume III, Number 2, August 1, 1975.

**NORTHEASTERN UNIVERSITY 1975-77  
UNIVERSITY COLLEGE**



The University College Bulletin is a document of record issued in August, 1975, for two years. Addenda to this bulletin will be published in August, 1976.

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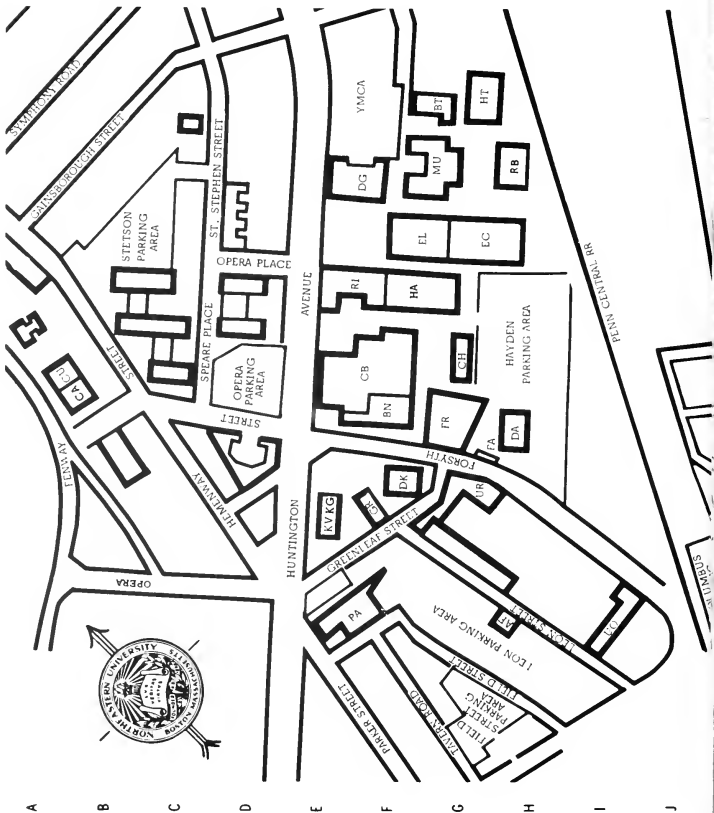
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# MAP REFERENCE

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F10  
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## Building

Barletta Natatorium  
Botolph Building  
Cabot Physical Education Ctr.  
Churchill Hall  
Cushing Hall  
Dana Research Center  
Dockser Hall  
Dodge Library  
Ell Student Center and Alumni Auditorium  
Forsyth Building  
Forsyth Building Annex  
Greenleaf Building  
Hayden Hall  
Hurtig Hall  
Cahners Hall  
Knowles Center (Volpe)  
Knowles Center (Gryzmish)  
11 Leon Street  
African-American Institute  
Mugar Life Sciences Building  
Parker Building  
Richards Hall  
Robinson Hall  
United Realty Building

## Building Designation

BN  
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**UNIVERSITY COLLEGE OFFICES**

|                                |                    |          |
|--------------------------------|--------------------|----------|
| Office for General Information | 102 Churchill Hall | 437-2400 |
| Office of the Registrar        | 120 Hayden Hall    | 437-2300 |
| Burlington Campus              |                    | 272-5500 |

**Regular Office Hours**

|                              |                    |                      |
|------------------------------|--------------------|----------------------|
| Boston                       |                    |                      |
| (120 HA & 102 CH)            | Monday–Friday      | 8:30 a.m.–8:30 p.m.  |
| (102 CH)                     | Saturday           | 8:30 a.m.–1:00 p.m.  |
| Burlington (Suburban Campus) | Monday–Friday      | 8:00 a.m.–10:00 p.m. |
|                              | Saturday           | 8:00 a.m.–1:00 p.m.  |
| Framingham North High School | Monday–Thursday    | 5:30–9:30 p.m.       |
| Lynn English High School     | Monday & Wednesday | 5:30–9:30 p.m.       |
| Haverhill High School        | Monday–Tuesday     | 5:30–9:30 p.m.       |
| Norwood Junior High North    | Monday–Wednesday   | 5:30–9:30 p.m.       |
| Weymouth High Schools        | Monday–Thursday    | 5:30–9:30 p.m.       |
| Boxford (Masconomet)         | Tuesday            | 5:30–9:30 p.m.       |
| Milford High School          | Monday–Tuesday     | 5:30–9:30 p.m.       |
| Revere High School           | Tuesday & Thursday | 5:30–9:30 p.m.       |

**Summer Office Hours**

|                    |                 |                      |
|--------------------|-----------------|----------------------|
| Boston             |                 |                      |
| 102 Churchill Hall | Monday–Thursday | 8:30 a.m.–8:30 p.m.  |
|                    | Friday          | 8:30 a.m.–4:30 p.m.  |
|                    | Saturday        | Closed               |
| 120 Hayden Hall    | Monday–Thursday | 8:30 a.m.–8:30 p.m.  |
|                    | Friday          | 8:30 a.m.–4:30 p.m.  |
| Burlington         | Monday–Friday   | 8:00 a.m.–10:00 p.m. |
|                    | Saturday        | Closed               |

1975-1976 ACADEMIC CALENDAR

Fall Quarter 1975 Classes Begin Monday, September 29, 1975

FALL REGISTRATION DATES

|  |                   |  |
|--|-------------------|--|
| Boston                                       | 5:30-8:00 p.m.    | Monday-Friday,<br>September 8-12                 |
| Boston                                       | 9:00 a.m.-12 noon | Saturday, September 13                           |
| Boston                                       | 5:30-8:00 p.m.    | Monday-Thursday,<br>September 15-18              |
| Burlington                                   | 5:30-8:00 p.m.    | Monday-Thursday,<br>September 15-18              |
| Burlington                                   | 12 noon-8:00 p.m. | Tuesday, September 16                            |
| Boxford (Masconomet)                         | 5:30-8:00 p.m.    | Tuesday, September 9 and<br>Monday, September 15 |
| Framingham North H. S.                       |                   |  |
| Haverhill H. S.                              |                   |  |
| Lynn English H. S.                           |                   |  |
| Norwood Jr. H. S. North                      |                   |  |
| Revere H. S.                                 | 5:30-8:00 p.m.    | Monday, September 8 and<br>Monday, September 15  |
| Weymouth North H. S.                         |                   |  |
| Milford H. S.                                |                   |  |
| Fall Quarter Classes Begin                   |                   | Monday, September 29                             |
| Columbus Day Observed                        | No Classes        | Monday, October 13                               |
| Veterans' Day Observed                       | No Classes        | Tuesday, November 11                             |
| Thanksgiving Recess                          | No Classes        | Thursday-Saturday,<br>November 27-29             |
| Final Examination Period<br>For Fall Quarter |                   | Monday, December 15-<br>Saturday, December 20    |

Winter Quarter 1975-1976 Classes Begin Monday, January 5, 1976

WINTER REGISTRATION DATES

|                         |                |   |
|-------------------------|----------------|---|
| Boston                  | 5:30-8:00 p.m. | Monday-Friday,<br>December 8-12             |
| Boxford (Masconomet)    | 5:30-8:00 p.m. | Tuesday, December 9                         |
| Burlington              | 5:30-8:00 p.m. | Monday-Thursday,<br>December 8-11           |
| Framingham North H. S.  | 5:30-8:00 p.m. | Monday-Thursday,<br>December 8-11           |
| Haverhill H. S.         | 5:30-8:00 p.m. | Monday and Tuesday,<br>December 8-9         |
| Lynn English H. S.      | 5:30-8:00 p.m. | Monday and Wednesday,<br>December 8 and 10  |
| Milford H. S.           | 5:30-8:00 p.m. | Monday and Tuesday,<br>December 8-9         |
| Norwood Jr. H. S. North | 5:30-8:00 p.m. | Monday-Wednesday,<br>December 8-10          |
| Revere H. S.            | 5:30-8:00 p.m. | Tuesday and Thursday,<br>December 9 and 11  |
| Weymouth North H. S.    | 5:30-8:00 p.m. | Monday-Thursday,<br>December 8-11           |
| Christmas Vacation      | No Classes     | Monday, December 22-<br>Saturday, January 3 |



|   |            |   |
|---|------------|---|
| Winter Quarter Classes Begin                |            | Monday, January 5                       |
| Martin Luther King Day Observed             | No Classes | Thursday, January 15                    |
| Washington's Birthday Observed              | No Classes | Monday, February 16                     |
| Final Examination Period for Winter Quarter |            | Monday, March 22–<br>Saturday, March 27 |

## Spring Quarter 1976

Classes Begin Monday, April 5, 1976

### SPRING REGISTRATION DATES

|  |                |  |
|--|----------------|--|
| Boston   | 5:30–8:00 p.m. | Monday–Friday,<br>March 15–19            |
| Boxford (Masconomet)                                       | 5:30–8:00 p.m. | Tuesday, March 16                        |
| Burlington   | 5:30–8:00 p.m. | Monday–Thursday,<br>March 15–18          |
| Framingham North H. S.                                     | 5:30–8:00 p.m. | Monday–Thursday,<br>March 15–18          |
| Haverhill H. S.  | 5:30–8:00 p.m. | Monday and Tuesday,<br>March 15 and 16   |
| Lynn English H. S.   | 5:30–8:00 p.m. | Monday and Wednesday,<br>March 15 and 17 |
| Milford H. S.  | 5:30–8:00 p.m. | Monday and Tuesday,<br>March 15 and 16   |
| Norwood Jr. H. S. North                                    | 5:30–8:00 p.m. | Monday–Wednesday,<br>March 15–17         |
| Revere H. S.   | 5:30–8:00 p.m. | Tuesday and Thursday,<br>March 16 and 18 |
| Weymouth North H. S.                                       | 5:30–8:00 p.m. | Monday–Thursday,<br>March 15–18          |
| Spring Recess (or Make-Up<br>Period for Lost Snow<br>Days) |                | Monday, March 29–<br>Saturday, April 3   |
| Spring Quarter Classes Begin                               |                | Monday, April 5                          |
| Patriot's Day Observed                                     | No Classes     | Monday, April 19                         |
| Memorial Day Observed                                      | No Classes     | Monday, May 31                           |
| Final Examination Period<br>for Spring Quarter             |                | Tuesday, June 14–<br>Monday, June 19     |
| Commencement   |                | Sunday, June 20                          |

## Summer Quarter 1976

Classes Begin Monday, June 28, 1976

### REGISTRATION FOR ENTIRE SUMMER QUARTER

|                              |                   |                             |
|------------------------------|-------------------|-----------------------------|
| Boston                       | 5:30–8:00 p.m.    | Monday–Friday,<br>June 7–11 |
| Burlington                   | 12 noon–8:00 p.m. | Tuesday, June 8             |
| Summer Quarter Classes Begin |                   | Monday, June 28             |

### REGISTRATION FOR SECOND SIX-WEEK TERM

|  |                |   |
|--|----------------|---|
| Boston   | 5:30–8:00 p.m. | Monday and Tuesday,<br>July 26 and 27           |
| Burlington                                     | 5:30–8:00 p.m. | Monday, July 26                                 |
| Independence Day Observed                      | No Classes     | Monday, July 5                                  |
| Labor Day Observed                             | No Classes     | Monday, September 6                             |
| Final Examination Period<br>for Summer Quarter |                | Monday, September 13–<br>Thursday, September 18 |

### **Program Advisers**

Program advisers are available each day and evening by appointment in the University College Office. They are competent to assist the student in planning a program suitable to his general educational and career objectives. They can also answer questions relating to degree requirements, course sequence, and proper scheduling of courses. Appointments may be arranged by calling the University College Office (437-2400) or by coming in person to 102 Churchill Hall. There is no charge for this service.

Program advisers are also available during registration at all registration sites. No appointment is necessary.

### **Counseling and Testing Center**

Counseling and testing to aid a student or prospective student with career, educational, or personal concerns are available days and certain weekday evenings until 8:30 p.m. Information regarding fees and appointments may be obtained by calling 437-2142, or by going to the Counseling and Testing Center, 302 Ell Student Center.

### **Equal Opportunity Policy**

Northeastern University is committed to a policy of providing equal opportunity for all. In all matters involving admission, registration, and all official relationships with students, including evaluation of academic performance, the University insists on a policy of nondiscrimination. Northeastern University is also an equal opportunity employer; it is institutional policy that there shall not be any discrimination against any employee or applicant for employment because of race, color, religion, sex, age, national origin, or physical or mental handicap.

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# the university

Founded in 1898, Northeastern University is incorporated as a privately endowed nonsectarian institution of higher learning under the General Laws of Massachusetts. By special enactment, the State Legislature has given the University general degree-granting powers. The University is governed by a Board of Trustees elected by and from the Northeastern University Corporation, which comprises more than 178 distinguished business and professional men and women.

From its beginning Northeastern University's dominant purpose has been to identify community educational needs and to meet these in distinctive and serviceable ways. The University has not duplicated the programs of other institutions, but has pioneered new areas of educational service.

A distinctive feature of Northeastern University is its Cooperative Plan, under which students alternate periods of work and study. The Plan was initiated by the College of Engineering in 1909 and subsequently adopted by the Colleges of Business Administration (1922); Liberal Arts (1935); Education (1953); Pharmacy (1962); Nursing (1964); Boston-Bouv  College (1964); the College of Criminal Justice (1967); and by Lincoln College's daytime Bachelor of Engineering Technology program (1971).

This time-tested method of education offers students the opportunity to gain valuable practical experience as an integral part of their college programs and also enables them to contribute substantially to the financing of their education. The "Co-op" Plan has been extended to the graduate level in engineering, actuarial science, professional accounting, business administration, rehabilitation administration, and law.

In the field of adult education, Northeastern University offers graduate and undergraduate degree programs and non-credit programs which are specifically designed to meet the needs and interests of adults who wish to further their education on a part-time basis.

All formal courses of study leading to degrees in the Graduate Division, Lincoln College, and University College are approved by the undergraduate faculties concerned, and are governed by the same qualitative and quantitative standards as the regular day curricula. Courses are scheduled in the day and evening at the Boston Campus, Suburban Campus in Burlington, and at other off-campus locations near Boston.

## UNDERGRADUATE COLLEGES

### **Boston-Bouvé College**

Boston-Bouvé College offers four major programs of study: physical education, recreation education, and health education, leading to the degree of Bachelor of Science in Education; and physical therapy, leading to the degree of Bachelor of Science in Physical Therapy.

The combined programs of liberal arts, science, and professional preparation include field experience and student teaching as well as leadership training in camping and outdoor education at the Warren Center for Physical Education and Recreation in Ashland. In accordance with Northeastern's Cooperative Plan of Education, students are offered varied opportunities for alternate terms of work-study experience during upper-class years.

### **College of Business Administration**

The College of Business Administration offers programs of study in the principal fields of business leading to the Bachelor of Science degree in Business Administration. These programs are offered on the five-year Co-operative Plan, under which students gain substantial practical experience as an integral part of their undergraduate course of study.

The College also sponsors a Center for Management Development, which annually conducts an intensive program designed to provide professional growth for middle management executives. The plan of instruction, based on a modification of the Northeastern Cooperative Program, permits the participants to maintain their job responsibilities during the six-month period of the course. The Management Development Program is conducted at Andover, Massachusetts, on the campus of Andover Academy.

The Bureau of Business and Economic Research, concerned particularly with problems of the New England region, is an integral part of the College. The Bureau conducts research projects under faculty leadership using undergraduate cooperative students as research assistants.

### **College of Criminal Justice**

The College of Criminal Justice offers a full-time day curricula on the Cooperative Plan leading to the degree of Bachelor of Science.

### **College of Education**

The College of Education offers programs leading to the degree of Bachelor of Science in Education. These are designed to prepare stu-

dents for teaching or administrative positions in elementary and secondary schools. Curricula are offered on the five-year Cooperative Plan, which provides employment in libraries, social service agencies, and school systems.

### **College of Engineering**

The College of Engineering offers five-year cooperative curricula in civil, mechanical, electrical, chemical, and industrial engineering leading to the degree of Bachelor of Science with specification according to the engineering department in which the student qualifies, and a more general program without specification leading to the Bachelor of Science degree. A six-year program in power systems engineering in collaboration with public utilities leads to both the bachelor's and master's degree in electrical engineering. The College also offers during evening hours part-time programs leading to Bachelor of Science degrees in Civil and Electrical Engineering. These programs extend over eight years, cover the identical courses given in the day cooperative curricula, and meet the same qualitative and quantitative standards of scholarship.

### **College of Liberal Arts**

The College of Liberal Arts offers majors in the arts and sciences leading to the Bachelor of Arts or Bachelor of Science degrees. With the exceptions of preprofessional programs, curricula are normally five years in length and operate on the Cooperative Plan.

### **Lincoln College**

Lincoln College offers engineering technology programs leading to the degrees of Associate in Engineering, Associate in Science, and Bachelor of Engineering Technology. These programs are made available as:

- (a) A full-time day curricula on the Cooperative Plan leading to the degree of Bachelor of Engineering Technology (B.E.T.) in Mechanical and Electrical Engineering.
- (b) A part-time evening program including pre-technology preparatory courses and degree programs leading to the Associate in Engineering (A.E.); and the Bachelor of Engineering Technology (B.E.T.) in Civil, Mechanical, and Electrical Engineering. The Associate in Science degree may be earned in the mathematical, physical, and chemical sciences.

The day B.E.T. program is designed to meet the needs of the high school graduate or the student transferring from a community college or technical institute and who desires the full time day curricula on the Northeastern Cooperative Plan.



In addition to its traditional curricula, Lincoln College Evening School offers interdisciplinary and certificate programs providing technological and professional development opportunities to meet special needs of the part-time student. These programs are designed to provide trained people for ready assimilation by the engineering field and to prepare students for the challenge of interfacing technology and society.

Recognizing the increasing need for higher levels of technical efficiency in firefighters, Lincoln College, in collaboration with local fire-fighting agencies, has designed a part-time evening program leading to an Associate in Science degree in Fire Technology. The curriculum includes a broad spectrum of those science technologies which are basic in coping with the fire fighting problems attendant to the complexities of today's society.

### **College of Nursing**

The College of Nursing offers two separate and distinct programs of study, both organized on the Cooperative Plan:

- (a) A three-year curriculum in preparation for the R.N. Examinations, and leading to the Associate in Science degree.
- (b) A five-year curriculum in preparation for the R.N. Examinations, and leading to the Bachelor of Science degree in Nursing.

Five of Boston's leading hospitals—Beth Israel, Children's Hospital Medical Center, New England Deaconess, Peter Bent Brigham, and Massachusetts General—collaborate with Northeastern by providing suitable cooperative work opportunities during the students' upper-class years in these programs.

### **College of Pharmacy and Allied Health Professions**

The College of Pharmacy and Allied Health Professions offers five-year cooperative curricula leading to the degree of Bachelor of Science in Pharmacy, and to the Bachelor of Science degree with majors in medical laboratory science (medical technology, cytotechnology, and hematology) medical record administration, and management in health care agencies and institutions. Associate degree programs are offered in medical laboratory science, respiratory therapy, dental hygiene, and cytotechnology. The College has academic responsibility and, in cooperation with the medical schools and teaching hospitals in the Boston area, offers the professional program for physician assistants.

### **University College**

University College, so called because it draws upon the resources of the other colleges of the University, offers part-time day and evening

programs in liberal arts, business administration, law enforcement, education, health professions, and therapeutic recreation service programs, leading to the Associate in Science, Bachelor of Arts, and Bachelor of Science degrees. It does not duplicate the offerings of the day colleges, but provides curricula which cut across traditional subject-matter areas to meet the particular needs of adult students. Students may pursue a degree or simply take courses, based on needs and interests, up to a total of forty quarter hours of credit. Courses are offered in Boston as well as in Boxford, Burlington, Framingham, Lynn, Haverhill, Milford, Revere, Weymouth, and several other convenient locations.

Adult Day Programs refers to University College courses that are offered Monday through Friday, 9:00 a.m. to 5:00 p.m., to meet the needs of adults with family or other obligations who wish to engage in part-time study during the day. In addition to the daytime offering of regular University College credit courses, Adult Day Programs also offers daytime workshops and conferences, sometimes over weekends, with the option for credit. Adult Day Programs are offered primarily on the Boston and Burlington campuses, with a limited number of courses offered at other off-campus locations.

Students may enroll as degree candidates or elect single courses appropriate to their needs and interests. Courses are scheduled in the day and evening at the Boston Campus, Suburban Campus in Burlington, and other off-campus locations near Boston.

## **GRADUATE SCHOOLS**

### **Actuarial Science**

Master of Science in Actuarial Science.

### **Arts and Sciences**

The Master of Arts degree may be earned in economics, English, history, political science, psychology, sociology, and social anthropology. The Master of Science degree is available in biology, chemistry, mathematics, and physics. The Master of Science in Health Science and the Master of Public Administration degrees are also offered. In addition, there are programs leading to the Doctor of Philosophy Degree in biology, chemistry, economics, mathematics, physics, psychology, and sociology.

### **Boston-Bouvé College**

Master of Science in Physical Education and Master of Science in Recreation Education.

### **Business Administration**

Master of Business Administration.

**Criminal Justice**

Master of Science in Criminal Justice.

**Education**

Master of Education, and the Certificate of Advanced Graduate Study.

**Engineering**

Master of Science with course specification, including a special six-year program in Power Systems Engineering leading to both bachelor's and master's degrees in Electrical Engineering; a similar six-year program in Mechanical Engineering leading to both bachelor's and master's degrees; the Master of Science degree in Civil Engineering; master's degrees in the fields of Industrial Engineering and Engineering Management; the professional Engineer degree in Electrical Engineering; the Ph.D. in the fields of Electrical, Chemical, Civil, and Mechanical Engineering; and Doctor of Engineering degree in Chemical Engineering. In addition, the intermediate degree of Engineer is offered.

**Law**

The School of Law offers a full-time program of professional instruction leading to the degree of Juris Doctor (J.D.) The three-year curriculum includes twelve months of experience in law offices. There are no courses for part-time or evening students.

**Pharmacy and Allied Health Professions**

Master of Science with specialization in Hospital Pharmacy, Industrial Pharmacy, Medicinal Chemistry, Pharmacology, Medical Laboratory Science, and Doctor of Philosophy in Medicinal Chemistry.

**Professional Accounting**

A five-quarter curriculum leading to the degree of Master of Science in Accounting.

**INSURANCE INSTITUTE**

The Insurance Institute, part of University College, is sponsored by local insurance organizations and companies. It offers a number of non-credit courses in preparation for the Chartered Life Underwriter and Chartered Property-Casualty Underwriter Designations as well as for the General Insurance, Insurance Adjuster, and Risk Management Certificates. (437-2506).

**CENTER FOR CONTINUING EDUCATION**

The Center for Continuing Education was established to relate the University to the needs of its community in a period of accelerated change. Its programs are composed of seminars, conferences, institutes, forums, and a wide variety of special courses designed to serve

specific needs. The Division of Special Programs, working cooperatively with trade associations and professional societies, offers several programs dealing with current needs and problems. Through its Division of Community Services, working with governmental agencies and community organizations, the Center is becoming increasingly involved in social problems on both the local and national level.

Many of these programs are conducted at Henderson House, Northeastern University's conference center in Weston, Massachusetts.

### **RESEARCH ACTIVITIES**

The faculties of the University are engaged in a wide variety of basic research projects in business, science, social science, pharmacy, and engineering. These are coordinated by the Dean of Research, whose services are University-wide and available to the faculties of all the Colleges.

Although Northeastern is primarily concerned with undergraduate and graduate instruction, the University believes that the most effective teaching and learning takes place in an environment characterized by research activities directed toward extending the frontiers of knowledge.

# **buildings and facilities**

The main campus of Northeastern University is located at 360 Huntington Avenue in the Back Bay section of Boston. Many of the city's famous cultural, educational, and philanthropic institutions are situated in the Back Bay, including the Museum of Fine Arts, Symphony Hall, Horticultural Hall, the Isabella Stewart Gardner Museum, the Harvard teaching hospitals, and many schools and colleges. Most are within walking distance of Northeastern University.

Major transportation facilities serving the Boston area are Logan International Airport, two rail terminals, bus terminals serving inter- and intrastate lines, and MBTA subway-bus service within the metropolitan-suburban area. There is a subway stop in front of the campus. For motorists, the best routes to the campus are the Massachusetts Turnpike (Exit 22) and Route 9, of which Huntington Avenue is the intown section.

The campus of 47 acres is divided by Huntington Avenue, with the main educational buildings on one side and dormitories on the other. The principal buildings, all of which have been constructed since 1938, are of glazed brick in contemporary classic style. Most are interconnected by underground passageways.

## **Carl S. Eli Student Center**

The Carl S. Eli Student Center provides facilities for student recreation and for extracurricular activities. The Alumni Auditorium, with a seating capacity of 1,300, is part of the Center. Also included are special drama facilities, a ballroom, main lounge, fine arts exhibition area, student offices, conference rooms, and a dining area seating more than 1,000.

## **The University Library**

The Dodge Library is the main library on the Boston campus and maintains an open-stack system. Bound volumes in the library system exceed 360,000, and microfilm titles, 267,000. Collections are located in these areas:

1. The General Collection in the book stacks as indicated by the classification number given in the upper left corner of the catalog card.
2. The Reference Collection in the Cabot Reading Room to the left of the Circulation Desk, which includes bibliographies, maps, company publications, the pamphlet file, and association publications. Theses, under the supervision of the Reference Dept., housed in the basement, and available on request in the Reference Room.
3. The Periodical Collection in the Webster Reading Room to the right of the circulation desk, consisting of current periodicals, periodical indexes, and abstracts, with two adjacent stack levels for back files of bound volumes. The Microfilm Collection in room 108, adjacent to the Webster Reading Room.
4. The Reserve Book Collection on the second floor.
5. The Foreign Literature Collections in the Webster Reading Room to the right of the Circulation Desk.
6. The Collections of Fine Arts, housed in the Richardson Room on the second floor. The Audio Facility for spoken and music recordings and magnetic tapes for instructional and individual use also located in this room.
7. The American and English Literature Collections in the Literature Reading Room.
8. Government Documents maintained on the basement level.

The Card Catalog is a union list of materials in the University libraries and is located in the Webster Reading Room. There are also book catalogs of the collections in the Math/Psych Library, Chemistry Building Library, Documents and Reserve Rooms. There is an Information Desk in this room to assist people in using the card catalog during the day.

The Circulation Dept. has a printed list of all materials charged out, which may be consulted by all users. To borrow materials, University identification must be presented. For extensive research, where the University Library does not have the material, application should be made to the Inter-Library Loan Librarian for materials needed from other libraries. Information service is available in this department in the evenings.

### **Library Hours — Boston Campus**

|                   |                         |
|-------------------|-------------------------|
| Monday — Thursday | 7:45 a.m. to 10:00 p.m. |
| Friday            | 7:45 a.m. to 7:30 p.m.  |
| Saturday & Sunday | 1:00 p.m. to 5:00 p.m.  |

The University Library System includes three graduate libraries in the Division of Research. Physics-Electrical Engineering is housed in 325

Dana Research Center. Mathematics-Psychology is housed on the fifth floor of the United Realty Building and Chemistry is located on the first floor of Hurtig Hall.

### **Library Hours — Suburban Campus, Burlington**

Monday — Friday                      8:30 a.m. to 9:00 p.m.

### **Cabot Physical Education Center**

The Godfrey Lowell Cabot Physical Education Center is one of the best equipped in New England. It contains four basketball courts, an athletic cage, a women's gymnasium, and a rifle range, as well as administrative offices for the Department of Athletics and for the Physical Education Department of Boston-Bouv  College.

A recent addition to the center, the Barletta Natatorium, houses a 105-foot swimming pool, a practice tank for the crew, handball courts, and shower and dressing facilities.

### **Dockser Hall**

Charles and Estelle Dockser Hall, completed in 1968, houses a large gymnasium, dance studio, motor performance laboratory, college library, community recreation laboratory, folk arts center, dark and music rooms, recreation resources area, locker rooms, offices, classrooms, conference room and lounge, storage facilities, and a research laboratory.

### **Suburban Campus**

The Suburban Campus, located near the junction of Routes 128 and 3 in Burlington, Massachusetts, was established to meet the needs of individuals and of industry in the area.

In addition to graduate courses in engineering, business administration, education, portions of undergraduate programs leading to the associate and bachelor's degrees, special programs for adults, and non-credit state-of-the-art programs are offered.

### **Henderson House**

The University's conference center, Henderson House, is located in Weston, Massachusetts. The Center for Continuing Education conducts short-term courses, seminars, and special institutes for business, professional, and research groups. Henderson House is 12 miles from the main campus.

**Warren Center**

The Warren Center for Physical Education and Recreation in Ashland, Massachusetts, serves as a year-round outdoor laboratory for students in Boston-Bouvé College. There are facilities for conferences, special education in arts and crafts, and sports—including aquatics. Buildings include a lodge, cottages, and an infirmary.

**Marine Science Institute**

The Marine Science Institute at Nahant, Massachusetts, about 20 miles northeast of Boston, is a research and instructional facility primarily engaged in studies of marine biology and oceanography. The Institute is operated the year around.

**Brockton, Nashua, and Framingham Campuses**

For students residing in southeastern Massachusetts and northeastern Rhode Island, the Graduate School of Business Administration offers a major portion of its M.B.A. Program at facilities in Brockton, Massachusetts. These facilities, made available by the Veterans Administration Hospital, are conveniently located just off Route 24.

Students residing in the southern New Hampshire area may take a major portion of the M.B.A. Program at facilities in Nashua, New Hampshire. These facilities are furnished by Sanders Associates, Inc. and are located in their headquarters on Route 3, just over the Massachusetts line.

For students in the Framingham-Worcester area, a major portion of the M.B.A. Program may be taken at classroom facilities located in Framingham, Massachusetts.



# university college

## **The Programs**

University College is committed to the education of mature, adult students who wish to live effectively in today's complex society. The programs in University College are specifically designed to satisfy the changing professional, cultural, and social needs and interests of adults.

Degree programs have been developed in 39 major fields of study in the areas of business administration, education, liberal arts, law enforcement, therapeutic recreation, and health-related programs. Flexible curricula are offered on a part-time basis Monday through Saturday during day and evening hours convenient to adult students. Students may elect single courses or may enroll in full degree programs leading to the Associate in Science or the Bachelor's degree. Short-term seminars are also offered for credit. Classes are scheduled in locations which are accessible to the urban and the suburban community. Students may attend classes at the Huntington Avenue Campus, Boston, or the Suburban Campus, Burlington, Massachusetts, as well as other off-campus locations north, south, and west of Boston.

University College programs are constantly evaluated and redesigned when necessary in order to keep pace with the changing needs and interests of its students and the community.

## **The Faculty**

Approximately 850 men and women comprise the part-time teaching staff of University College. Included are members of the full-time faculty of the Basic Colleges of Northeastern University and other educational institutions in New England, as well as outstanding New England business and professional leaders with backgrounds of training and experience in specialized areas. The faculty are selected because they are highly successful in their fields and are well qualified to provide sound methods of teaching for adults in an interesting, inspiring, and effective manner.

## **The Student Body**

The student body of University College represents diversified interests which, properly recognized and utilized, become one of the basic strengths in adult education. There are approximately 12,000 students in University College who range in age from 18 years to beyond retirement. While some students enroll in University College immediately after high school graduation, others may have graduated 25 years prior to enrollment in college-level courses.

University College students are men and women who have full-time commitments to their jobs, families, or other responsibilities. They may enroll in a single course or in a full degree curriculum, depending on whether their goal is job advancement, a new career, or personal enrichment.

# academic policies

## Admission

All applicants who satisfy the requirements as regular or special students are admitted as part-time students in University College. It is advisable for students to have an interview with an admissions counselor to help plan their academic program in University College, particularly in cases where previous credit has been completed at other institutions, in order to avoid possible duplication of courses. Because of the diversity of the student body in terms of background, age, interests, needs, etc., there are no entrance examinations and college board examination scores are not required. In lieu of entrance examinations, students must maintain a C average in order to be admitted to degree candidacy.

## Regular Students

To be enrolled as a regular student, that is, to become a degree candidate, the applicant must have completed an approved secondary school course or the equivalent 15 units\* of a high school diploma. Equivalency certificates are accepted. Regular students are those students who expect to follow a degree program.

## Special Students

Special students are those students who do not wish to enroll in a full degree program, but are interested in taking only one or more courses appropriate to their needs or interests. Credits for these courses may be transferred to a degree program if the student desires to pursue a degree at a later time.

## Procedure for Admission As a Degree Candidate: Matriculation

Petition forms for admission to the status of a degree candidate are available at offices on all University College Campuses. There are two methods of matriculation:

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\*A unit represents a year's work in any subject in any approved secondary school constituting approximately a quarter of a full year's work, or the equivalent. A four-year day high school course is regarded as representing at least 15 units of work, or 3 units in junior high school and 12 units in a three-year high school.

**A. Standard Method of Matriculation**

1. If a student has completed 40 quarter hours of credit in University College, he cannot register for additional courses unless he has been officially accepted as a degree candidate.
2. In order to matriculate as a degree candidate, the student must have a high school diploma or its equivalent and must achieve a cumulative quality point average of 2.00 (an average grade of C) for all courses completed before filing the petition. In the Liberal Arts Program, the 8 quarter hours of required English must be completed prior to matriculation.

**B. Optional Method of Matriculation by Transfer Students**

1. If a student has successfully completed an associate degree program at another accredited institution, he may file for matriculation following one quarter in residence in University College.
2. If a student has completed 40 quarter hours at another accredited institution, he may file for matriculation following one quarter in residence in University College.
3. If a student has completed 40 quarter hours of combined credit from another accredited institution and University College, he may file for matriculation.

All students who file for matriculation must have a high school diploma or its equivalent, a cumulative quality point average of 2.00, and, if in the Liberal Arts Program, 8 quarter hours of required English.

A student who matriculates via Method B, is required to obtain written permission from his Program Director before taking courses in another institution subsequent to matriculation in University College.

The Committee on Academic Standing may require a student to take one or more aptitude or interest tests if his credentials or academic record fail to give evidence of probable academic success. In this case, the student will be notified in writing that arrangements for testing should be made by him with the University Counseling and Testing Center. A fee is charged for administering these tests.

**Advanced Standing Credit**

After completion of matriculation requirements in University College (40 quarter hours) Advanced Standing Credit may be obtained in two ways:

***By Transfer of Credit from Another Institution***

Subject to approval by the Director of Admissions, credit may be granted for work completed in other approved schools, colleges, or universities. An applicant who wishes to receive credit by transfer

should petition for transfer credit with the Director of Admissions. He should then write to the Registrar of the institution previously attended and request that an official transcript be sent to the Director of Admissions in University College. The transcript indicates honorable dismissal, courses completed, credits and grades received. The transcript should be sent well in advance of the registration period. A petition for transfer credit must be filed with the Director of Admissions to facilitate proper identification and processing of transfer credit.

Students who anticipate taking courses at other Colleges or Universities while enrolled in University College must secure permission in advance from the appropriate program director in University College.

Students who have been dismissed from another institution for academic reasons must accompany their application with a statement from the dean or other appropriate official of their previous institution setting forth the reasons for dismissal or probationary status with recommendation for continued study. All applicants will be considered on their own merits.

### *By Examination*

Credit is granted for successful completion of appropriate examinations in the College Level Examination Program (CLEP). Credit may be disallowed for work previously completed because of the remoteness of the time of study; however, these applicants may take CLEP Examinations where appropriate. Credit is also granted for non-collegiate experience in both the Liberal Arts and Law Enforcement Programs. See pages 87 and 109.

In all cases students admitted by transfer or advanced standing credit from any other institution must meet the requirements for matriculated status as set forth under the regulations applicable to regular students.

### **Residence Requirement**

Every candidate for the baccalaureate or associate degree must fulfill the residence requirement. The residence requirement is defined as the satisfactory completion in University College immediately preceding graduation of 46 consecutive quarter hours of work in course, with the further provision that at least 12 of the 46 quarter hours must be in the candidate's major field. All programs to meet the residency requirement must have the approval of the Dean. Students whose attendance in degree programs is interrupted for a period of one year or more will be reinstated into the program in effect at the time of their re-entry into University College.

In the case of students who for causes beyond their control move outside of the reasonable commuting area of the College, and who have

completed 134 or more quarter hours of credit, the Committee on Education will entertain a petition to allow them the privilege of completing their degree requirements at some other approved college. Under no circumstances will a degree be awarded to any student who has completed less than 46 quarter hours of credit in courses in University College.

### **Quality Requirement for Graduation**

A cumulative quality point average of 2.00 (an average grade of C) is required for graduation. Advanced standing credits are not averaged in the cumulative score.

### **Graduation with Honor**

Candidates who have achieved distinctly superior attainment in their academic work will be graduated with honor. Upon special vote of the faculty a limited number of this group may be graduated with high honor or with highest honor. To be considered for graduation with honor, a student must have completed a minimum of 72 quarter hours of work at University College. Courses credited by advanced standing will be eliminated in determining honor graduates.

### **Attendance at Commencement**

Attendance at commencement for all University College degree candidates is optional. Degree candidates will be polled by the commencement committee in this regard during the Spring Quarter.

### **Quality Points**

The requirement for graduation from University College is 174 quarter hours for a bachelor's degree and 96 quarter hours for an associate's degree, with attainment of a quality point average of 2.00. Although the credits allowed for acceptable work completed elsewhere by transfer students count toward fulfillment of quantitative graduation requirements, neither the credits nor the grades earned in such courses is included in quality point computations for graduation.

The method of figuring quality points is as follows: Each quarter hour credit of A grade is multiplied by 4, B grade by 3, C grade by 2, D grade by 1, and F grade by 0. The total number of quality points, divided by the total number of quarter hour credits completed, shall be the quality point average.

Students receiving an F grade in a required course must repeat the course in its entirety including term work, examinations, and attendance.

## Quality Point Averages

The Registrar's Office will not be able to recalculate or confirm the calculations of quality point averages for individual students. Each student's record will be brought up to date before his graduation. In the meantime, borderline cases will be checked by the Director of Admissions of University College.

## Dean's List

All matriculated students who have taken a minimum of 18 quarter hours in three consecutive quarters (Fall, Winter, Spring) of an academic year and have completed all their courses with an average of 3.0 or better shall be placed on the Dean's List. Each student shall receive a letter of commendation from the Dean of University College.

## Pass-Fail Courses

Any student who is not on academic probation and who has completed 40 Q.H. of academic work may register for one pass/fail course and, thereafter, for one course on a pass/fail basis for each 10 Q.H. of successfully completed work. Written permission of the appropriate academic dean must be obtained for each pass/fail course. At no time may a student register for more than one pass/fail course per quarter.

Such courses will be restricted to free electives outside the major field of specialization, so that no part of the specifically prescribed curricula will be affected.

The grades recorded on the basis of the pass/fail system of grading will not figure in the computation of the QPA.

Satisfactory completion of the work in all courses taken on the pass/fail system of grading will be designated on the transcript by the letter "S." Unsatisfactory work will be designated on the transcript by the letter "U." Any unsatisfactory grade must be handled according to the existing policy of the University, but must never be cleared through the election of the same course on the basis of the pass/fail system of grading.

An incomplete in a course taken on a pass/fail basis will be designated by the letter "X" on the transcript and must be treated according to the normal procedure for incomplete grades.

*The following REGISTRATION PROCEDURES shall prevail:*

Students wishing to use the pass/fail system of grading for a course must meet all prerequisites for such course and should signify their desire to apply for a specific course on the basis of this system of registration.

The student's decision to take a course on a pass/fail basis must be made prior to the second meeting of the course and no changes will be permitted thereafter.

### **Class Changes**

University College reserves the right to cancel, split, or combine classes when necessary.

### **Registration**

Before attending classes, students must report to the registration area to register. All students must complete their registration properly before attending class. Attendance at class, even with the instructor's permission, does *not* constitute registration.

No academic credit will be recorded for students not properly registered.

In order to insure academic success, students are strongly advised to adhere to course prerequisites.

### **Class Attendance and Preparation**

Students are expected to attend all exercises in the subjects they are studying unless excused in advance.

Absence from regularly scheduled exercises in any subject will seriously affect the standing of the student. Consecutive absences may cause the removal of the subject or subjects from the student's schedule.

Two hours of preparation are normally required for each hour spent in the classroom.

### **Withdrawal Policy**

A student may be withdrawn from a course in several ways:

**VOLUNTARY WITHDRAWAL**—The student completes a drop course form in the Registrar's Office or notifies the Registrar in writing of his intention to withdraw from the course.

**INITIAL ABSENCE WITHDRAWAL**—If a student is absent without permission from the first three meetings of a course, he will be withdrawn by the Registrar.

**END OF COURSE WITHDRAWAL**—If, by the ninth or tenth week of the quarter, the Registrar, after examining the attendance book, has every reason to believe the student has dropped from the course, he will officially withdraw the student and so note in the attendance book.



## **Change of Address**

Change of address and/or name should be reported immediately to the Registrar's Office.

## **Absence Because of Illness**

All students who are absent from school because of extended illness, and do not wish to be withdrawn, should inform the Registrar's Office by letter.

## **Examinations**

Term tests are scheduled in each quarter at the option of the instructor and are regarded as part of the term's course work. A final examination will be held at the end of each quarter in each course unless an announcement to the contrary is made.

## **Homework Assignments**

Students are responsible for obtaining their homework assignments by contacting their instructor or another student in their class. Homework assignments are not available in the University College Office.

## **Missed Final Examinations**

A student does not automatically have the right to make up a missed final examination. Students must petition for this privilege and must pay a fee of \$5.00 for each special examination when filing for the special make-up exam. All students who wish to clear an I (incomplete) grade must pay the fee and file the proper petition in the Registrar's Office, 120-HA, or in each off-campus administrative office. Petitions for missed finals must be filed in accordance with the schedule listed below:

| <b>final examination<br/>missed during:</b> | <b>file petition<br/>no later than:</b> | <b>make-up final exam<br/>during week of:</b> |
|---|---|---|
| Fall Quarter 1975                           | January 16, 1976                        | February 9, 1976                              |
| Winter Quarter 1976                         | April 16, 1976                          | May 10, 1976                                  |
| Spring Quarter 1976                         | July 9, 1976                            | August 9, 1976                                |
| Summer Quarter 1976                         | October 8, 1976                         | November 1, 1976                              |

Students will be notified by mail when and where to take the missed final examination. All examinations will be administered on the Boston Campus.

Students who do not take make-up final examinations as scheduled (see below for I grade explanation) and clear an incomplete through the instructor, will be billed the \$5.00 make-up exam fee by the Bursar before the I grade is changed.

## Grading System

The following system of grading is used. The numerical equivalent for each grade is in parentheses.

|                        |                                      |
|------------------------|--------------------------------------|
| A (4.0) — Outstanding  | L — Audit (No Credit)-UC and LC only |
| B (3.0) — Good         | S — Satisfactory (Pass-Fail Grade)   |
| C (2.0) — Satisfactory | U — Unsatisfactory (Pass-Fail Grade) |
| D (1.0) — Poor         | X — Incomplete (Pass-Fail Grade)     |
| F (0.0) — Failure      | * — Grade not received               |
| I (—) — Incomplete     |                                      |

A general average of D is unacceptable and will not allow a student to continue in University College or to receive a degree from North-eastern University. The F grade is a definite failure and requires repetition of course in its entirety. The I grade is given only when the student fails to take the final examination.

### The I Grade

The I grade may be given only when the student fails to take the final examination.

An instructor may decide that a student has done so poorly in the course that even a perfect grade in a make-up final could not raise the grade from F, in which case F is the proper grade, irrespective of the missed final.

If the student fails to complete some other major portion of the course work (examination, quizzes, major paper, etc.) a letter grade (A, B, C, D, F) should be assigned. This grade can be changed, upon petition, when the deficiency which led to the assigned letter grade is made up to the satisfaction of and in the manner prescribed by the instructor.

All deficiencies must be made up in the prescribed manner no later than the quarter following the recording of the grade.

### \*Grade Reports

An official grade report will be mailed approximately three weeks after the quarter is completed to each registered student. Grades will not be given over the telephone or at the Registrar's Office.

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\*A supplementary grade report will be issued when the missing grade is received. Please do not call the Registrar's Office for it. University regulations prohibit issuing grades by telephone.

S, U, X, I and L grades are not included in the Quality Point Average. S grades are included in "Earned Hours" toward the degree. Cumulative totals do not appear on reports for non-matriculated students.

## Auditing Policy

Students are permitted to audit courses upon filing the usual registration forms and paying the regular tuition fees. There is no reduction in fees for auditing. An auditor may participate in class discussion, complete papers and projects and take tests and examinations for informal evaluation, if desired. However, regardless of the amount or quality of work completed, **no academic credit will be granted at any time for courses audited.**

## Audit Procedure

The student's decision to take a course on an audit basis must be communicated in writing to the Registrar prior to the fourth class meeting of the course. No exception to this procedure can be approved without authorization by the Academic Standing Committee of the College.

## Calculation of Quality Point Average

1. When the student has more than one grade in the same course, the most recent grade will be used in the calculation of the quality point average.
2. A grade of I will not be considered in the calculation of quality point average.
3. Although advanced standing credits (ASC) allowed for acceptable work completed at other institutions by transfer students count toward completion of the quantitative credit requirements, neither the credits nor the grades earned in such courses is included in quality point average computations.

For example, a student who has registered for seven courses, cleared a failure in one of them, and received advanced standing credit (ASC) in another, may calculate his quality point average as follows:

| Grade Achieved | Numerical Equivalent | Credit Hours | Quality Points |
|----------------|----------------------|--------------|----------------|
| A              | 4.0                  | × 4 =        | 16.0           |
| B              | 3.0                  | × 4 =        | 12.0           |
| C              | 2.0                  | × 3 =        | 6.0            |
| D              | 1.0                  | × 3 =        | 3.0            |
| F              | 0.0                  | × 2 =        | 0.0            |
| F B            | 3.0                  | × 2 =        | 6.0            |
| I              | —                    | × — =        | —              |
| ASC            | —                    | × — =        | —              |
|                |                      | Totals       | 18      43.0   |

$$\text{Quality Point Average} = \frac{\text{Total Quality Points (43.0)}}{\text{Total Credit Hours (18)}} = 2.389$$

### **Academic Probation**

Students whose scholarship in any given period is unsatisfactory may be dropped from the College or may be placed on probation.

### **Disciplinary Action**

The Committee on Regulations and Discipline has the authority to dismiss from the College or place on probation at any time or to strike from the list of candidates for the degree, any student deemed unworthy because of conduct or character.

### **Maximum Course Load**

New students may elect up to five (5) subjects per quarter without special permission.

Former students, who are not on the Dean's List, may also elect up to five (5) subjects per quarter without special permission. Program Directors may allow six (6) subjects if the student has a 2.50 Q.P.A. or better.

Dean's List students may elect any number of subjects per quarter not to exceed sixteen (16) quarter hours without special permission.

*Not all the courses listed in this bulletin will be offered. A final list of those classes to be offered will be contained in the University College Schedule of Courses which gives the hours, days and location of classes. This schedule is issued prior to the Fall, Winter, Spring, and Summer Quarters.*

### **Changes in Requirements**

The continuing development of University College forces frequent revision of curricula. In every new bulletin some improvements are indicated. When no hardship is imposed on the student because of changes, and when the facilities of the school permit, the student is expected to meet the requirements of the latest bulletin. If the student finds it impossible to meet these requirements, the bulletin for the year in which he entered becomes the binding one.

# tuition and fees

Tuition and fees are refundable only as stated under "Refund of Tuition." Checks and drafts for all charges are to be drawn to the order of Northeastern University.

## **Initial Registration Fee**

A ten dollar (\$10.00) registration fee, required of all new students is due and payable upon registration. This fee is nonrefundable.

## **Tuition**

Tuition for all credit courses is \$35.00 per quarter hour of credit. Charges for registration and tuition for special courses are at the rate specified for each course. Students are permitted to audit courses, however, there is no reduction in fees for auditing.

Non-credit courses are charged at quarter hour rates comparable to those of credit courses meeting on an equivalent contact hour schedule.

Students are not permitted to attend class sessions or take any examination or test until they have paid their tuition fees or have made satisfactory arrangements for payment.

Students will not be advanced in class standing, or permitted to re-enroll in the University, nor will degrees be conferred until all financial obligations to the University have been met.

No certificate of honorable dismissal will be issued to any student who has not fully met his financial obligations to the University.

## **Tuition Budget Payment Plans**

Occasionally situations develop—usually beyond the control of the student—which make it difficult to meet the payments in the manner outlined above. Under such circumstances the student is advised to discuss his problem personally at the Bursar's Office, where one of the budget plans or a deferred payment agreement may be worked out. Such arrangements should be made before the end of the first week of the quarter or within one week of the date of registration if

the student enters late. A charge of \$2.00 will be made. Failure to take immediate action will result in a late payment fee of \$10.00.

**Tuition Underwritten by Employers**

An increasing number of companies are underwriting part or all of the cost of tuition of students in their employ. In cases where payment is to be made directly by the employer to the University, the student should furnish to the Bursar's Office a purchase order covering his registration or a statement from an officer of his company certifying that the company is underwriting the tuition.

**Veterans' Benefits**

Any veteran covered by Public Law 89-358 should report to Room 251 Richards Hall to fill out the proper enrollment forms.

**Late Payment Fee**

Bills for tuition and fees are payable on or before Saturday of the week of issuance. A late payment fee of \$10.00 is charged to all students failing to comply unless special payment arrangements are approved by the Bursar's Office.

**Refund of Tuition**

The general policy in all schools and colleges of the University with respect to refunds of tuition to students is as follows:

The University provides all instruction on an academic quarter basis for which students pay at the beginning of each quarter. Tuition refunds will be granted through the first four weeks of a quarter only when specific conditions are met. Questions regarding refunds should be discussed with the Bursar.

Tuition refunds will be granted only on the basis of the date appearing on the official withdrawal application when filed with the Registrar in Room 120 Hayden Hall. Non-attendance does not constitute official withdrawal.

Refunds will be granted in accordance with the following schedule:

| official withdrawal filed within: | percentage of tuition |
|-----------------------------------|-----------------------|
| 1st week of quarter               | 100%                  |
| 2nd week of quarter               | 75%                   |
| 3rd week of quarter               | 50%                   |
| 4th week of quarter               | 25%                   |

### **Courses in Other Departments of the University**

University College students assigned to courses in other departments of the University are charged the tuition rates and other fees effective in the departments in which they are enrolled.

### **Student Center Fee**

All students in University College on the Huntington Avenue Campus are charged \$.75 each quarter for the services available in the Student Center.

### **Laboratory Fee**

All students enrolled in biology or health professions courses which include laboratory, must purchase from the Bursar's Office a Laboratory Fee and Deposit Card for \$15.00 (\$5.00 for extra cards). For chemistry, the cards cost \$20.00 per quarter with the possibility of a \$5.00 refund at the end of the quarter, depending upon breakage. The fee for arts and crafts courses is \$5.00. Upon completion of the course or withdrawal during the quarter, the student must check his status with the laboratory attendant. The Bursar's Office will then refund any unused balance shown on the Laboratory Fee and Deposit Card.

### **Graduation Fee**

The University graduation fee, charged to those who are candidates for the baccalaureate or associate degree, is \$25.00 payable on or before May 1 of the year in which the student expects to graduate.

### **Missed Final Examination Fee**

Students absent from the regularly scheduled final examination at the end of a course may petition for a "Missed Final Examination." The fee for each examination requested by the student is \$5.00. The fee must be paid when the petition is filed in the University Registrar's Office.

### **Transcripts**

Students may request transcripts of their grades at the Registrar's Office. There is a charge of \$1.00 per copy, payable in advance.

# financial aid and scholarships

*General information pertaining to financial aid opportunities and specific scholarship applications for part-time students are available in the University College Admissions Office, Room 102 Churchill Hall.*

*The following scholarships and awards are available to students enrolled in University College.*

## **Professor Joseph A. Mullen Scholarships**

The Massachusetts Chapter of the American Society of Training and Development has established a fund to provide annual scholarship awards to deserving part-time students upon the recommendation of the Dean of University College.

## **Martin Luther King Jr. Scholarships**

Established in 1969 in memory of the late Rev. Martin Luther King Jr. Awards are made as openings occur, to adults from minority groups who would otherwise be unable to continue their education. Stipends will cover tuition expenses not to exceed six quarter hours in any academic quarter (excluding Summer Quarter).

## **Kappa Tau Phi Scholarships**

The Kappa Tau Phi Sorority Scholarship Fund annually makes available scholarship awards. They are granted to women students in the liberal arts, business, and engineering programs, respectively, who rank highest at the end of the upper-middle year. In the event the student is eligible for an award of greater monetary value, the award will be made to the next highest-ranking woman student. To be eligible for this scholarship, the student must be enrolled in a program of at least two evenings per week and must be a candidate for the bachelor's degree. In determining the recipient, grades of all courses completed in prior years shall be considered.

## **Harry Olins Scholarship**

The Harry Olins Scholarship Fund was established as an expression of firm belief in University College students and "what they stand for."



The fund, presented by Mrs. Harry Olins in recognition of her husband's long service on the faculty, makes available an annual tuition award to two students who in terms of scholastic achievement, character, and personal need best typify the spirit of Northeastern University.

To be eligible for this award, the student must be a degree candidate and carry a full academic load during the school year.

### **Northeastern University Alumni Club of Lowell Scholarships**

The Northeastern University Alumni Club of Lowell awards scholarships annually to evening students in University College from the Greater Lowell area who demonstrate high scholastic ability and are in need of financial assistance. Students interested should obtain an application in the University College office, 102 Churchill Hall. Upon filing an application and submitting a resume, the student will be required to complete an interview with the Scholarship Committee of the Alumni Club of Lowell.

### **Pilot Freight Carriers Scholarships**

Pilot Freight Carriers, Winston-Salem, North Carolina, awards \$500 annually to advanced transportation students who have achieved high academic standing and who have paid their tuition expenses without prior aid. The award may be shared by more than one student. Qualified candidates should apply during the Spring Quarter, in University College, 102 Churchill Hall. The final determination is made by the Dean of University College.

### **H. Patricia Taylor Scholarship Fund**

The H. Patricia Taylor Scholarship Fund was established in 1974 by H. Patricia Taylor, a graduate of University College, and her husband, Harry C. Taylor, a graduate of the School of Business. The Scholarship expresses their appreciation for financial assistance made available to Mrs. Taylor while obtaining her degree, and is an attempt to provide similar funds to assist others in realizing their potential through higher education. The income from the Scholarship Fund will be awarded annually to a student enrolled in University College or Lincoln College who demonstrates financial need and academic stability and who meets certain other conditions of eligibility.

### **University College Faculty Club Memorial Scholarship Awards**

The Faculty Club of University College, Northeastern University, offers two awards annually, primarily for excellence in studies, to Bachelor degree candidates in University College who have carried, and are currently carrying, a minimum of 24 quarter hours annually. Applica-

tions, available during the Winter Quarter, must be returned before the Spring Quarter.

These awards shall be known as University College Faculty Club Memorial Scholarship Awards in commemoration of the Club's deceased members.

### **U.S. Navy Field Training Supervisors Association Memorial Scholarship**

A scholarship fund has been established by the generosity of the United States Navy Field Training Supervisors Association, in commemoration of the Association's deceased members. The Scholarship is awarded annually to a deserving student, selected by the Committee on Scholarships, who is a Management major, working toward a Bachelor of Science degree in the evening program of University College.

### **Sigma Epsilon Rho Honor Society Scholarship Award**

The Sigma Epsilon Rho Honor Society Scholarship Award, established in 1974 by the membership of the Society, is awarded annually to an undergraduate student of University and/or Lincoln College at Northeastern University. Eligible students must have a cumulative Quality Point Average of 3.0 or better after completing 80 percent or more of their required studies.

### **Traffic Club of New England Scholarship**

The Traffic Club of New England provides 12 basic and four advanced scholarships annually for persons employed in transportation and industry traffic departments. The scholarships are divided equally between industry and carrier applicants, and each award is applicable toward tuition, books, and incidental expenses involved in Transportation Management courses. The purpose of the plan is to afford a limited number of young men an opportunity to expand and improve their education by systematized study in courses in the field of transportation and traffic management. The scholarships are administered cooperatively with the Scholarship Committee of the Traffic Club of New England. Applications may be secured from and filed with the Secretary, The Traffic Club of New England, 294 Washington Street, Boston, Massachusetts 02108.

### **Community Sources**

Students and their families are urged to explore community, industrial, and foundation sources for collegiate financial aid. Parental employers or the appropriate union organization may be a source. In addition, local, civic, political, religious, or educational leaders are often aware

of aid sources in immediate community. Some typical sources may include: P.T.A., Kiwanis, Lions, Elks, Knights of Columbus, Masons, Sons of Italy, Rotary, State Rehabilitation, American Legion, etc.

### **University Grants**

Each year Northeastern University grants a substantial number of full and partial tuition grants to students who have demonstrated both above-average scholastic achievement and financial need. All applications for aid are automatically considered for all grants administered by the University. It is not necessary for an applicant to specify the grant in which he is interested.

### **National Direct Student Loan**

This program is available to students who are carrying at least one-half the normal academic workload, are accepted as degree candidates, and who show evidence of financial need.

Students may borrow as much as \$1500 each academic year, up to the maximum of \$7500 for their undergraduate education, or a total of \$10,000 through the completion of graduate studies. Repayment and interest on these loans do not begin until nine months after the student ceases to carry at least a half-time academic load at an institution of higher education. The repayment of principal may be extended over a ten-year period with the interest at the rate of 3% per annum. Repayment may be deferred up to a total of three years while a borrower is serving as a Peace Corps or VISTA volunteer.

Borrowers who elect to teach the disadvantaged or handicapped may qualify for cancellation of their entire obligation at the rate of 15% per year of teaching service. A borrower serving as a full-time member of the Armed Services of the United States is entitled to cancel 12½% per annum of the principal outstanding on any loans, for each year of such service, up to a maximum cancellation of 50%.

### **Guaranteed Student Loan Program**

Under this program, students who are matriculated degree candidates, enrolled for at least one-half the normal academic work load, may borrow from a participating bank or other financial institution. Terms and conditions vary from state to state, but a student generally may borrow up to \$2,000 a year (the law allows a maximum of \$2,500 per year) depending on financial need. The Federal Government pays the interest while the student is in school if the student is eligible for interest subsidy.

Applications for the loan itself are available from local banks or the Education Office of your state government. Additional information and

necessary application forms for Massachusetts residents are available from the Financial Aid Office.

### **Veterans' Benefits**

Any veteran covered by the Veterans Readjustment Act of 1966, Public Law 89-358, should report to Room 251 Richards Hall to fill out the proper enrollment forms. These forms will be made available during registration periods for all students in the Law Enforcement Programs at special off-campus locations.

Students needing additional information as to eligibility, allowances, or other details are urged to contact their local office of the Veterans Administration as early as possible.

### **Law Enforcement Assistance Administration**

The Law Enforcement Assistance Administration, U.S. Department of Justice, has set up an Office of Academic Assistance under authority of the Omnibus Crime Control and Safe Streets Act of 1968, Public Law 90-351. Through the University, loans up to \$2200 per year for tuition and grants up to \$250 per academic quarter for tuition and fees are available to law enforcement personnel in undergraduate or graduate programs leading to degrees or certificates in areas directly related to law enforcement.

The loans, limited to full-time students in or preparing for law enforcement or corrections careers, are cancelled at the rate of 25 percent for each year the recipient subsequently serves in law enforcement at federal, state, or local level.

The grants are available to full-time or part-time students employed in a publicly-funded law enforcement agency, and involve a signed agreement to remain in the service of a law enforcement agency employing such applicant for two years following completion of the course for which aid was given.

Applications for loans or grants should be obtained from the Office of Financial Aid, Room 252 Richards Hall.

**Please note that aid granted from programs sponsored by the Federal Government is dependent upon the amount of funds allocated to Northeastern.**

**The University does not award financial assistance in any form to non-citizens of the United States.**

# student activities

Student activities for part-time students are planned, organized, and operated by the student body with the assistance of the Director of University-Lincoln College Student Activities. The programs are designed to keep pace with the changing needs of adult students and to provide maximum opportunity for student participation. All part-time students in University College and Lincoln College are welcome to participate.

The program is flexible in nature and pioneering in spirit to meet the needs of adult students. The Office of University-Lincoln College Student Activities is particularly interested in developing new clubs which will benefit students professionally and educationally. If students wish to start clubs related to their professions, this office will help them plan and organize clubs on the local and national level. The program is dedicated to assisting the adult student in the development of his fullest potential. The University-Lincoln College Student Activities Office is located in 102 Churchill Hall.

## **Purpose**

The purposes of part-time student activities are:

To provide opportunities for the development and pursuit of cultural interests and professional objectives.

To encourage the development of leadership activities and skills.

To enable the student to identify more closely with the University.

To include the family, as an important and vital motivating force, in the part-time student's educational career.

## **Sigma Epsilon Rho Honor Society**

Sigma Epsilon Rho is the honor society of University College. Its purposes are:

To promote acquaintance and good fellowship among those students who have attained highest scholastic standing in the College.

To stimulate the student body to higher scholastic accomplishment

through the bearing, influence, and work of these selected men and women.

To develop methods of mutual improvement and advancement among members.

To support high moral, professional, and scholastic ideals.

Only honor graduates or seniors with honor standing at the end of the junior year are eligible for admission to the society. Admission is by invitation after nomination by the society.

An outstanding book is awarded each year by Sigma Epsilon Rho Society to the highest-ranking student at the conclusion of the junior year. Students will receive the award only in the event that they enroll for the subsequent year.

### **Northeastern Flying Huskies**

The Flying Huskies was organized by the students of the aviation technology program in the Spring of 1969. The main objective of the organization is to promote safety and precision in aviation. During the past several years the "Huskies" have been involved with intercollegiate competition and have been invited to the national championships for four consecutive years. Thanks to the support of many interested parties and a fine membership, the "Huskies" are becoming well-known in the collegiate flying circle. Although membership is restricted to those enrolled in the aviation technology program, the club hopes to promote comradeship among all pilots.

### **Lambda Alpha Epsilon**

Lambda Alpha Epsilon is a national law enforcement fraternity founded in 1957. The Northeastern Chapter Kappa Phi Beta is open to part-time and day students enrolled in Law Enforcement and Security Programs, and also to professional men in the fields of law enforcement and security. The fraternity is dedicated to the furtherance of professional standards in law enforcement.

### **Evening Student Council**

The Evening Student Council was formed to provide a representative body to promote the welfare of the student body in non-academic areas and to foster extracurricular activities which will enrich University life. It affords participants opportunities to meet and develop close personal relationships with fellow students and the administrative staff.

The Evening Student Council provides students with opportunities to develop leadership skills and gives them a chance to discuss matters of professional interest with experts in their chosen field.

The Council is made up of interested students in University and Lincoln College, representatives of part-time interest groups, and those specially certified by the Council because of their demonstrated interest in the overall adult programs of the University.

The E.S.C., a member of the United States Association of Evening Students, meets evenings on a monthly basis in the Student Center. Students are welcome to visit, observe, and express opinions concerning part-time student life. Free refreshments are served at all meetings.

### **Use of Gymnasium Facilities**

Specific schedules for use of the pool, weight training room, indoor athletic field and track, handball courts, gymnasium, and wrestling room are set up each quarter for use by all part-time students. In order to become eligible, students must obtain a temporary Gymnasium Pass each time they wish to use the Cabot Gymnasium Complex. Passes are available in the Cabot Complex, Monday through Friday from 4:30 p.m. to 9:00 p.m. and on Saturday and Sunday from 1:00 p.m. to 4:00 p.m. All students requesting a pass must present their Student Identification Card prior to receiving a pass. Passes are issued on a first-come, first-served basis. Students using the Cabot Gymnasium Complex are required to abide by all the Rules of the Gym and may be asked to complete a Medical Release form.

### **Evening Ski Club**

The Evening Ski Club was established as a special interest club by students in University and Lincoln College to give skiers an opportunity to meet other skiers for the purpose of promoting the sport and its related activities. Events sponsored by the Evening Ski Club include wine and cheese parties held locally and in the various ski areas of Maine, New Hampshire, and Vermont. A summer clambake is also arranged on a local beach, usually in July or August. Meetings are held from October through April on a bi-weekly basis on the main campus. Students interested should contact the Evening Student Activities Office in 102 Churchill Hall.

### **Alumni Association**

More than 52,000 alumni are members of the all-University Alumni Association which has as its prime purposes the promotion of the welfare of Northeastern University, the establishment of a mutually beneficial relationship between the University and its alumni, and the perpetuation of fellowship among members of the Association.

The Alumni Relations office is located in Room 101, Ell Student Center. The official records and addresses of alumni are maintained in Room 260, United Realty Building.

Activities of the Association, including the Homecoming Day celebration and the annual presentation of Professional Promise Awards to outstanding seniors in Lincoln and University Colleges, are directed by the Vice President for Alumni Affairs. Alumni officers also attend meetings of the undergraduate classes to form a closer relationship between the Association and its future members.

The Alumni Relations Office assists the various class officers in planning class reunions. Each class normally holds a reunion every five years during the month of June. The Vice President for the Alumni Class Council is responsible for coordinating class activities and organizing class functions.

The Vice President for Alumni Clubs works in close association with officers of the more than 50 Regional Alumni Clubs which have been established from coast to coast. All alumni are eligible to become members of these organizations. The alumni clubs meet periodically, often in conjunction with visits from members of the faculty or with athletic events.

For Boston area alumni, monthly luncheon meetings are held in both the downtown and uptown sections of the city.

The Association also sponsors and assists the Alumnae Organization and the Varsity Club, both of which have their own officers and conduct various programs throughout the year. Through the Varsity Club, the Association presents trophies to the outstanding athlete of the year in each of the five major sports.

One of the most recent developments in alumni activities is the organization of seminars which are conducted by the Association in cooperation with the University's Center for Continuing Education. The seminars are designed particularly for alumni who have a special interest in current events and the field of adult education.

The Northeastern University Alumni Association is a member of the American Alumni Council, a professional organization composed of representatives of all major colleges and universities in the United States and Canada.

### **Alumni Relations**

The Alumni Association is providing a uniquely valuable service to both the University and the community by sponsoring admissions conferences for parents of high school students who are interested in attending college. These meetings, held in cooperation with the Northeastern Department of Admissions, have been extremely well attended. Local residents as well as Alumni of the University have been invited to these conferences which help to clarify many of the questions today's parents and young people have concerning application procedures of colleges and universities.



# programs of study

University College conducts part-time educational programs at the undergraduate level during day and evening hours. The programs are designed to meet the varying needs and interests of adult students who may enroll as (1) *Regular* students following degree programs or as (2) *Special* students taking single courses or special programs.

University College programs leading to the Bachelor of Science and Bachelor of Arts degrees provide opportunities for cultural and professional development equivalent in quality and scope to those offered in the conventional four-year college enrolling full-time students. The bachelor's degree requires 174 quarter hours of credit.

Programs leading to the Associate in Science degree provide students a background in fundamental areas in business administration, liberal arts, law enforcement, health professions, and therapeutic recreation services. The Associate degree requires 96 quarter hours of credit and is equivalent to the conventional two-year or junior college in scope and quality.

Degree curricula are offered in the following areas:

## BUSINESS ADMINISTRATION

| Major   | Degree               | Page |
|---|----------------------|------|
| Business Administration                         | Associate in Science | 60   |
| Electronic Data Processing                      | Associate in Science | 62   |
| Purchasing                                      | Associate in Science | 64   |
| Real Estate                                     | Associate in Science | 66   |
| Accounting                                      | Bachelor of Science  | 68   |
| Finance   | Bachelor of Science  | 69   |
| Industrial Management                           | Bachelor of Science  | 71   |
| Industrial Technology                           | Bachelor of Science  | 72   |
| Insurance                                       | Bachelor of Science  | 73   |
| Management                                      | Bachelor of Science  | 74   |
| Management Information Systems                  | Bachelor of Science  | 76   |
| Marketing                                       | Bachelor of Science  | 78   |
| Personnel and Industrial Relations              | Bachelor of Science  | 79   |
| Transportation and Physical Distribution        |                      |      |
| Management                                      | Bachelor of Science  | 80   |
| Combined Program in Liberal Arts and Management | Bachelor of Science  | 82   |

**LIBERAL ARTS**

| <b>Major</b>                   | <b>Degree</b>                         | <b>Page</b> |
|--------------------------------|---------------------------------------|-------------|
| Economics                      | Bachelor of Arts                      | 89          |
| English                        | Bachelor of Arts, Bachelor of Science | 90          |
| Fine Arts                      | Bachelor of Arts, Bachelor of Science | 91          |
| History                        | Bachelor of Arts, Bachelor of Science | 93          |
| Liberal Arts                   | Associate in Science                  | 94          |
| Music                          | Bachelor of Arts, Bachelor of Science | 103         |
| Political Science              | Bachelor of Arts, Bachelor of Science | 95          |
| Psychology                     | Bachelor of Arts                      | 98          |
| Sociology-Anthropology         | Bachelor of Arts, Bachelor of Science | 100         |
| Chemical-Biological Technology | Associate in Science                  | 105         |
| Chemical-Biological Technology | Bachelor of Science                   | 106         |

**LAW ENFORCEMENT**

| <b>Major</b>           | <b>Degree</b>        | <b>Page</b> |
|------------------------|----------------------|-------------|
| Correctional Practices | Bachelor of Science  | 110         |
|                        | Associate in Science | 114         |
| Law Enforcement        | Bachelor of Science  | 116         |
|                        | Associate in Science | 120         |
| Security               | Bachelor of Science  | 122         |
|                        | Associate in Science | 126         |

**HEALTH PROFESSION PROGRAMS**

| <b>Major</b>                                      | <b>Degree</b>        | <b>Page</b> |
|---|----------------------|-------------|
| Health Science                                    | Bachelor of Science  | 130         |
| Management in Health<br>Agencies and Institutions | Bachelor of Science  | 132         |
| Medical Laboratory Science<br>Cytotechnology      | Bachelor of Science  | 143         |
|   | Associate in Science | 143         |
| Medical Technology                                | Bachelor of Science  | 146         |
|   | Associate in Science | 146         |
| Medical Record Administration                     | Bachelor of Science  | 136         |
|   | Certificate          | 138         |
| Nursing Home Administration                       | Certificate          | 134         |
| Radiologic Technology                             | Associate in Science | 152         |
| Respiratory Therapy                               | Associate in Science | 140         |
| Medical Laboratory Science<br>Hematology          | Bachelor of Science  | 149         |

**EDUCATION**

| <b>Major</b>                         | <b>Degree</b>       | <b>Page</b> |
|--------------------------------------|---------------------|-------------|
| Teaching of English (in grades 7–12) | Bachelor of Science | 157         |

Course descriptions are listed in numerical order by department beginning on page 162.

**THERAPEUTIC RECREATION SERVICES**

| <b>Major</b>                    | <b>Degree</b>        | <b>Page</b> |
|---------------------------------|----------------------|-------------|
| Therapeutic Recreation Services | Certificate          | 161         |
|                                 | Associate in Science | 161         |

# **business administration**

**Paul D. Maxwell**, Assistant Dean  
Director, Business Administration Programs  
Telephone 437-2418

## **Aims**

Business Administration programs of study are offered to meet the needs of adult men and women wishing to acquire a college education on a part-time basis. The opportunity to achieve professional competence in a chosen field, while developing potential for further managerial growth, is one of the program's principal objectives. Degree programs are designed to create both a breadth of perspective and a degree of specialization. Breadth of perspective will be obtained through exposure to a well-balanced sequence of liberal arts courses, which emphasize fundamental economic laws, and the social and cultural foundations of our changing American society. Specialized knowledge for future managerial growth will be acquired through the study of basic business courses, in addition to a self-determined study of a major business area.

## **Requirements**

### **Associate in Science Degree**

The Associate in Science degree is offered in the following fields of study: Business Administration, Electronic Data Processing, Purchasing, and Real Estate. To qualify for the associate degree 96 quarter hours must be successfully completed in one of the four associate programs. Detailed information on these programs together with a recommended sequence for completing them appears on the following pages.

### **New Students—Please Note:**

In an effort to achieve a certain level of analytic and academic sophistication among students taking upper level business administration courses (designated by an asterisk wherever they appear in the catalog), University College instituted a new procedure in the Fall Quarter of 1969 whereby all new students are required to successfully com-

plete an appropriate associate degree program before they become eligible to take upper level business administration courses. Special students (students not pursuing a degree program) may take upper level courses if they can demonstrate to a program adviser (always present during registration) or to one of the deans in University College that they have an adequate background to cope with upper level course content. In determining whether a student has "an adequate background," the program advisers and the deans will evaluate, but not be limited to, such factors as work experience, former college work, independent study, etc.

The "appropriate" program for all Bachelor degree students, except the Management Information Systems (MIS) degree student, is the Associate degree program in Business Administration. The "appropriate" program for the MIS degree student is the Associate degree program in Electronic Data Processing (EDP). Students pursuing one of the other associate programs or students pursuing an "inappropriate" associate program (e.g., student following EDP associate program who wants to major in finance in his bachelor's program) may make special arrangements with the Dean of Administrations or the Director of Business Programs for a bachelor's program.

A student with a 2.0 average or better in an Associate degree program will be considered by University College as having "successfully completed" the program. It should be noted that students do not have to formally *receive* Associate degrees; successful completion of the Associate degree program (or demonstration of an "adequate background" in the case of special students) is all that is necessary for entry into upper level business administration courses.

### **The Bachelor of Science Degree**

The Bachelor of Science degree in Business Administration is offered in the following fields of study: Accounting, Finance, Industrial Management, Industrial Technology, Insurance, Management, Management Information Systems, Marketing, Personnel and Industrial Relations, Transportation and Physical Distribution Management, and in the Combined Program in Liberal Arts and Management.

In general, the Bachelor of Science degree requires successful completion of the following areas of study:

| <b>Liberal Arts</b>                                 | <b>quarter hours</b> |
|---|----------------------|
| Basic Courses and Electives                         | 70                   |
| <b>Business Administration</b>                      |                      |
| Basic Courses                                       | 66                   |
| Major Field of Study                                | 30                   |
| Electives (Business Administration or Liberal Arts) | 8                    |
| <b>Total</b>  | <b>174</b>           |

Detailed information on these programs appears on the following pages.

### **English Requirements**

The English requirements shall be fulfilled by taking Composition and Rhetoric I, II, (30.601, 30.602), Introduction to Literary Forms I, II (30.604, 30.605), and four additional hours of literature. Please review the appropriate detailed program information. For new English requirements see explanation on page 220.

**BUSINESS ADMINISTRATION****Associate in Science Degree**  
**quarter hours****Basic Courses—Liberal Arts**

|         |         |        |   |   |           |
|---------|---------|--------|---|---|-----------|
| 10.327, | 10.328, | 10.329 | Mathematics I, II, III                    | 6 |           |
| 16.501, | 16.502, | 16.503 | Earth Science I, II, III                  | 6 |           |
| 19.501, | 19.502, | 19.503 | Psychology I, II, III                     | 6 |           |
| 23.501, | 23.502, | 23.503 | Western Civilization I, II, III           | 6 |           |
|         | 30.601, | 30.602 | Composition and Rhetoric I, II            | 4 |           |
|         | 30.604, | 30.605 | Introduction to Literary Forms I, II      | 4 |           |
| 39.501, | 39.502, | 39.503 | Economic Principles & Problems I, II, III | 6 |           |
| 39.511, | 39.512, | 39.513 | Statistics I, II, III                     | 6 | <b>44</b> |

**Basic Courses—Business Administration**

|         |         |        |   |   |           |
|---------|---------|--------|---|---|-----------|
| 41.501, | 41.502, | 41.503 | Accounting Principles I, II, III                              | 6 |           |
| 43.501, | 43.502, | 43.503 | Introduction to Marketing I, II, III                          | 6 |           |
| 44.501, | 44.502, | 44.503 | Finance & Risk Management I, II, III                          | 6 |           |
| 45.501, | 45.502, | 45.503 | Management & Organization I, II, III                          | 6 |           |
| 45.506, | 45.507, | 45.508 | Production Management and<br>Manufacturing Systems I, II, III | 6 |           |
|         | 45.511, | 45.512 | Human Relations in Organizations I, II                        | 4 |           |
| 45.570, | 45.571, | 45.572 | Electronic Data Processing I, II, III                         | 6 |           |
|         |         | 45.599 | Basic Computer Programming                                    | 2 |           |
|         | 45.610, | 45.611 | Labor Management Relations I, II                              | 4 |           |
|         |         | 45.667 | Project Planning and Control                                  | 2 | <b>48</b> |

**Electives**

Literature

**4****Total Credits****96**

Students following a degree program should refer to suggested course sequence on the opposite page.

The following courses are frequently offered as single quarter intensives during the regular school year. Please refer to the current Schedule of Courses and Registration Guide for details.

|         |        |  |    |
|---------|--------|--|----|
| 19.508, | 19.509 | Fundamentals of Psychology I, II                   | 8* |
| 23.509, | 23.510 | Western Civilization A, B                          | 6  |
|         | 30.603 | Composition and Rhetoric                           | 4  |
|         | 30.603 | Composition and Rhetoric                           | 4  |
|         | 41.541 | Accounting Principles                              | 6  |
|         | 43.504 | Introduction to Marketing                          | 6  |
|         | 44.504 | Finance & Risk Management                          | 6  |
|         | 45.641 | Human Relations In Organization                    | 4  |
|         | 45.642 | Production Management and<br>Manufacturing Systems | 6  |
|         | 45.648 | Electronic Data Processing                         | 6  |
|         | 45.652 | Management and Organization                        | 6  |
|         | 45.690 | Labor Management Relations                         | 4  |

\*Additional 2 quarter hours of credit may be applied to Liberal Arts Electives in B.S. degree programs.

**BUSINESS ADMINISTRATION****Recommended Course Sequence for the 4-Year Program  
Leading to the Associate in Science Degree**

|                     | <b>Quarter I</b>  | <b>Quarter II</b>  | <b>Quarter III</b>  |
|---------------------|---|--|---|
| <b>1st<br/>Year</b> | Comp. & Rhet. I<br>Accounting I<br>Mgmt. & Org. I<br>Earth Science I              | Comp. & Rhet. II<br>Accounting II<br>Mgmt. & Org. II<br>Earth Science II | Elective<br>Accounting III<br>Mgmt. & Org. III<br>Earth Science III |
| <b>2nd<br/>Year</b> | Economics I<br>Math. I<br>Marketing I<br>Fin. & Risk I                            | Economics II<br>Math. II<br>Marketing II<br>Fin. & Risk II               | Economics III<br>Math. III<br>Marketing III<br>Fin. & Risk III      |
| <b>3rd<br/>Year</b> | West. Civ. I<br>Psych. I<br>E.D.P. I<br>Labor Mgmt. I                             | West. Civ. II<br>Psych. II<br>E.D.P. II<br>Labor Mgmt. II                | West. Civ. III<br>Psych. III<br>E.D.P. III<br>Elective              |
| <b>4th<br/>Year</b> | Intro. Lit. Forms I<br>Stat. I<br>Prodn. Mgmt. I<br>Basic Computer<br>Programming | Intro. Lit. Forms II<br>Stat. II<br>Prodn. Mgmt. II<br>Hum. Rel. I       | Project Planning<br>Stat. III<br>Prodn. Mgmt. III<br>Hum. Rel. II   |

| ELECTRONIC DATA PROCESSING            |  |  | Associate in Science Degree |    |
|---------------------------------------|--|--|-----------------------------|----|
|                                       |  |  | quarter hours               |    |
| Basic Courses—Liberal Arts            |  |  |                             |    |
| 10.327, 10.328, 10.329                | Mathematics I, II, III                         |  | 6                           |    |
| 16.501, 16.502, 16.503                | Earth Science I, II, III                       |  | 6                           |    |
| 19.501, 19.502, 19.503                | Psychology I, II, III                          |  | 6                           |    |
| 29.501, 29.502, 29.503                | Effective Speaking I, II, III                  |  | 6                           |    |
| 30.601, 30.602                        | Composition and Rhetoric I, II                 |  | 4                           |    |
| 30.604, 30.605                        | Introduction to Literary Forms I, II           |  | 4                           |    |
| 39.501, 39.502, 39.503                | Economic Principles & Problems I, II, III      |  | 6                           |    |
| 39.511, 39.512, 39.513                | Statistics I, II, III                          |  | 6                           | 44 |
|                                       |  |  |                             | —  |
| Basic Courses—Business Administration |  |  |                             |    |
| 41.501, 41.502, 41.503                | Accounting Principles I, II, III               |  | 6                           |    |
| 44.501, 44.502, 44.503                | Finance & Risk Management I, II, III           |  | 6                           |    |
| 45.501, 45.502, 45.503                | Management and Organization I, II, III         |  | 6                           |    |
| 45.570, 45.571, 45.572                | Electronic Data Processing I, II, III          |  | 6                           | 24 |
|                                       |  |  |                             | —  |
| Major Field of Study                  |  |  |                             |    |
| 10.332, 10.333, 10.334                | Mathematics for Business Management I, II, III |  | 6                           |    |
| 45.573, 45.574, 45.575                | Computer Programming for Business I, II, III   |  | 6                           |    |
| 45.577                                | Data Systems Administration                    |  | 2                           |    |
| 45.578, 45.579                        | Business Data Processing Applications I, II    |  | 4                           |    |
| 45.667                                | Project Planning and Control                   |  | 2                           |    |
| 45.586, 45.587, 45.588                | Systems Design and Techniques I, II, III       |  | 6                           | 26 |
| Electives                             |  |  |                             |    |
| Liberal Arts                          |  |  |                             | 2  |
|                                       |  |  |                             | —  |
| Total Credits                         |  |  |                             | 96 |

Students following a degree program should refer to suggested course sequence on the opposite page.

The following courses are frequently offered as single quarter intensives during the regular school year. Please refer to the current Schedule of Courses and Registration Guide for details.

|                |                                   |    |
|----------------|-----------------------------------|----|
| 19.508, 19.509 | Fundamentals of Psychology I, II  | 8* |
| 30.603         | Composition and Rhetoric          | 4  |
| 30.606         | Introduction to Literary Forms    | 4  |
| 41.541         | Accounting Principles             | 6  |
| 44.504         | Finance*and Risk Management       | 6  |
| 45.644         | Computer Programming for Business | 6  |
| 45.648         | Electronic Data Processing        | 6  |
| 45.652         | Management and Organization       | 6  |
| 45.689         | Systems Design and Techniques     | 6  |

\*Additional 2 quarter hours of credit may be applied to Liberal Arts electives.



**ELECTRONIC DATA PROCESSING****Recommended Course Sequence for the 4-Year Program  
Leading to the Associate in Science Degree**

|                     | <b>Quarter I</b>   | <b>Quarter II</b>   | <b>Quarter III</b>  |
|---------------------|--|---|---|
| <b>1st<br/>Year</b> | Comp. & Rhet. I<br>E.D.P. I<br>Mgmt. & Org. I<br>Math. I                               | Comp. & Rhet. II<br>E.D.P. II<br>Mgmt. & Org. II<br>Math. II                                      | Elective<br>E.D.P. III<br>Mgmt. & Org. III<br>Math. III                                       |
| <b>2nd<br/>Year</b> | Economics I<br>Accounting I<br>Math. for Bus.<br>Mgmt. I<br>Comp. Prog. Bus. I         | Economics II<br>Accounting II<br>Math. for Bus.<br>Mgmt. II<br>Comp. Prog. Bus. II                | Economics III<br>Accounting III<br>Math. for Bus.<br>Mgmt. III<br>Comp. Prog. Bus. III        |
| <b>3rd<br/>Year</b> | Fin. & Risk I<br>Psych. I<br>Sys. Des. Tech. I<br>Stat. I                              | Fin. & Risk II<br>Psych. II<br>Sys. Des. Tech. II<br>Stat. II                                     | Fin. & Risk III<br>Psych. III<br>Sys. Des. Tech. III<br>Stat. III                             |
| <b>4th<br/>Year</b> | Intro. to Lit. Forms I<br>Effective Spking. I<br>Data Sys. Adm.<br><br>Earth Science I | Intro. to Lit. Forms II<br>Effective Spking. II<br>Bus. Data Proc.<br>Appl. I<br>Earth Science II | Project Planning<br>Effective Spking. III<br>Bus. Data Proc.<br>Appl. II<br>Earth Science III |

**PURCHASING****Associate in Science Degree****Basic Courses—Liberal Arts**

|         |         |        |   | quarter hours |           |
|---------|---------|--------|---|---------------|-----------|
| 10.327, | 10.328, | 10.329 | Mathematics I, II, III                      | 6             |           |
| 19.501, | 19.502, | 19.503 | Psychology I, II, III                       | 6             |           |
|         | 30.601, | 30.602 | Composition and Rhetoric I, II              | 4             |           |
|         | 30.604, | 30.605 | Introduction to Literary Forms I, II        | 4             |           |
| 39.501, | 39.502, | 39.503 | Economic Principles and Problems I, II, III | 6             |           |
| 39.511, | 39.512, | 39.513 | Statistics I, II, III                       | 6             | <b>32</b> |

**Basic Courses—Business Administration**

|         |         |        |  |   |           |
|---------|---------|--------|--|---|-----------|
| 41.501, | 41.502, | 41.503 | Accounting Principles I, II, III       | 6 |           |
| 44.501, | 44.502, | 44.503 | Finance and Risk Management I, II, III | 6 |           |
| 45.501, | 45.502, | 45.503 | Management and Organization I, II, III | 6 |           |
| 45.570, | 45.571, | 45.572 | Electronic Data Processing I, II, III  | 6 | <b>24</b> |

**Major Field of Study**

|                  |         |        |  |   |           |
|------------------|---------|--------|--|---|-----------|
|                  |         | 43.520 | Industrial Marketing                   | 2 |           |
|                  | 45.511, | 45.512 | Human Relations in Organizations I, II | 4 |           |
|                  |         | 45.536 | Principles of Material Inspection      | 2 |           |
| 45.537,          | 45.538, | 45.539 | Purchasing I, II, III                  | 6 |           |
| 45.541,          | 45.542, | 45.543 | Law I, II, III*                        | 6 |           |
|                  | 45.610, | 45.611 | Labor Management Relations I, II       | 4 |           |
| 45.623,          | 45.624, | 45.625 | Manufacturing Processes I, II, III     | 6 |           |
|                  | 45.627, | 45.628 | Value Management I, II                 | 4 |           |
|                  |         | 45.626 | Professional Purchasing Techniques*    | 2 | <b>36</b> |
| <b>Electives</b> |         |        | Literature                             |   | <b>4</b>  |

**Total Credits****96**

Students following a degree program should refer to suggested course sequence on the opposite page.

**Additional Departmental Offerings**

|        |                                |   |
|--------|--------------------------------|---|
| 45.666 | Materials Acquisition Function | 2 |
|--------|--------------------------------|---|

Please see page 256 for course descriptions.

The following courses are frequently offered as single quarter intensives during the regular school year. Please refer to the current Schedule of Courses and Registration Guide for details.

|         |        |                                | quarter hours |
|---------|--------|--------------------------------|---------------|
| 19.508, | 19.509 | Fundamentals of Psych. I, II   | 8**           |
|         | 30.603 | Composition and Rhetoric       | 4             |
|         | 30.606 | Introduction to Literary Forms | 4             |
|         | 41.541 | Accounting Principles          | 6             |
|         | 44.504 | Finance and Risk Management    | 6             |

\*Upper level Business Administration course; may be taken in the Purchasing Associate Degree Program.

\*\*Additional 2 quarter hours of credit may be applied to Liberal Arts electives in B.S. degree programs.

|        |                                 |   |
|--------|---------------------------------|---|
| 45.550 | Purchasing                      | 6 |
| 45.641 | Human Relations In Organization | 4 |
| 45.643 | Law                             | 6 |
| 45.648 | Electronic Data Processing      | 6 |
| 45.652 | Management and Organization     | 6 |
| 45.690 | Labor Management Relations      | 4 |

## PURCHASING

### Recommended Course Sequence for the 4-Year Program Leading to the Associate in Science Degree

|                 | Quarter I   | Quarter II  | Quarter III   |
|-----------------|---|---|---|
| <b>1st Year</b> | Comp. & Rhet. I<br>Accounting I<br>Mgmt. & Org. I<br>Math. I        | Comp. & Rhet. II<br>Accounting II<br>Mgmt. & Org. II<br>Math. II        | Elective<br>Accounting III<br>Mgmt. & Org. III<br>Math. III           |
| <b>2nd Year</b> | Economics I<br>Psych. I<br>Fin. & Risk I<br>E.D.P. I                | Economics II<br>Psych. II<br>Fin. & Risk II<br>E.D.P. II                | Economics III<br>Psych. III<br>Fin. & Risk III<br>E.D.P. III          |
| <b>3rd Year</b> | Intro. to Lit. Forms I<br>Stat. I<br>Purchasing I<br>Manuf. Proc. I | Intro. to Lit. Forms II<br>Stat. II<br>Purchasing II<br>Manuf. Proc. II | Elective<br>Stat. III<br>Purchasing III<br>Manuf. Proc. III           |
| <b>4th Year</b> | Law I<br>Labor Mgmt. Rel. I<br>Hum. Rel. I<br>Value Mgmt. I         | Law II<br>Labor Mgmt. Rel. II<br>Hum. Rel. II<br>Value Mgmt. II         | Law III<br>Industrial Mktg.<br>Prin. Mat. Inspec.<br>Prof. Purchasing |

**REAL ESTATE****Associate in Science Degree****Basic Courses—Liberal Arts**

|         |         |        |   | quarter hours |           |
|---------|---------|--------|---|---------------|-----------|
| 10.327, | 10.328, | 10.329 | Mathematics I, II, III                      | 6             |           |
| 19.501, | 19.502, | 19.503 | Psychology I, II, III                       | 6             |           |
| 23.501, | 23.502, | 23.503 | Western Civilization I, II, III             | 6             |           |
|         | 30.601, | 30.602 | Composition and Rhetoric I, II              | 4             |           |
|         | 30.604, | 30.605 | Introduction to Literary Forms I, II        | 4             |           |
| 39.501, | 39.502, | 39.503 | Economic Principles and Problems I, II, III | 6             |           |
| 39.511, | 39.512, | 39.513 | Statistics I, II, III                       | 6             | <b>38</b> |

**Basic Courses—Business Administration**

|         |         |        |  |   |           |
|---------|---------|--------|--|---|-----------|
| 41.501, | 41.502, | 41.503 | Accounting Principles I, II, III       | 6 |           |
| 44.501, | 44.502, | 44.503 | Finance and Risk Management I, II, III | 6 |           |
| 45.501, | 45.502, | 45.503 | Management and Organization I, II, III | 6 |           |
| 45.541, | 45.542, | 45.543 | Law I, II, III*                        | 6 | <b>24</b> |

**Major Field of Study**

|         |         |        |                                      |   |           |
|---------|---------|--------|--------------------------------------|---|-----------|
| 47.501, | 47.502, | 47.503 | Real Estate Fundamentals I, II, III  | 6 |           |
|         | 47.508, | 47.509 | Real Estate Financial Analysis I, II | 4 |           |
|         |         | 47.511 | Fundamental Real Estate Appraisal    | 2 |           |
|         | 47.512, | 47.513 | Advanced Real Estate Appraisal I, II | 4 |           |
|         |         | 47.521 | Real Estate Development              | 2 | <b>18</b> |

**Electives**

|  |  |                         |   |           |
|--|--|-------------------------|---|-----------|
|  |  | Literature              | 4 |           |
|  |  | Liberal Arts            | 6 |           |
|  |  | Business Administration | 6 | <b>16</b> |

**Total Credits****96**

Students following a degree program should refer to the suggested course sequence on the opposite page.

**Additional Department Offerings**

|         |         |        |  |   |
|---------|---------|--------|--|---|
| 45.586, | 45.587, | 45.588 | Systems Design and Techniques I, II, III | 6 |
|         |         | 47.524 | Private Real Estate Law                  | 2 |
|         | 47.525, | 47.526 | Public Real Estate Law I, II             | 4 |
|         |         | 47.527 | Housing                                  | 2 |
| 47.528, | 47.529, | 47.530 | Real Estate Management I, II, III        | 6 |

Please see page 270 for course descriptions.

The following courses are frequently offered as single quarter intensives during the regular school year. Please refer to the current Schedule of Courses and Registration Guide for details.

|         |        |                                  | quarter hours |
|---------|--------|----------------------------------|---------------|
| 19.508, | 19.509 | Fundamentals of Psychology I, II | 8**           |
| 23.509, | 23.510 | Western Civilization A, B        | 6             |
|         | 30.603 | Composition and Rhetoric         | 4             |

\*Upper level Business Administration course; may be taken in the Real Estate Associate Degree program.

\*\*Additional 2 quarter hours of credit may be applied to Liberal Arts electives.

|        |                                |   |
|--------|--------------------------------|---|
| 30.606 | Introduction to Literary Forms | 4 |
| 41.541 | Accounting Principles          | 6 |
| 44.504 | Finance and Risk Management    | 6 |
| 45.643 | Law                            | 6 |
| 45.652 | Management and Organization    | 6 |

## REAL ESTATE

### Recommended Course Sequence for the 4-Year Program Leading to the Associate in Science Degree

|                 | Quarter I   | Quarter II  | Quarter III   |
|-----------------|---|---|---|
| <b>1st Year</b> | Comp. & Rhet. I<br>Accounting I<br>Mgmt. & Org. I<br>Math. I      | Comp. & Rhet. II<br>Accounting II<br>Mgmt. & Org. II<br>Math. II    | Elective<br>Accounting III<br>Mgmt. & Org. III<br>Math. III   |
| <b>2nd Year</b> | Economics I<br>Law I<br>Fin. & Risk I<br>R.E. Fund. I             | Economics II<br>Law II<br>Fin. & Risk II<br>R.E. Fund. II           | Economics III<br>Law III<br>Fin. & Risk III<br>R.E. Fund. III |
| <b>3rd Year</b> | Psych. I<br>Stat. I<br>R.E. Fin. Anal. I<br>Elective              | Psych. II<br>Stat. II<br>R.E. Fin. Anal. II<br>Elective             | Psych. III<br>Stat. III<br>R.E. Development<br>Elective       |
| <b>4th Year</b> | Intro. to Lit. Forms I<br>Fund. R.E. App.<br>Elective<br>Elective | Intro. to Lit. Forms II<br>Adv. R.E. App. I<br>Elective<br>Elective | Elective<br>Adv. R.E. App. II<br>Elective<br>Elective         |

| ACCOUNTING                           |         |  | Bachelor of Science Degree              |     |
|--------------------------------------|---------|--|---|-----|
|                                      |         |  | quarter hours                           |     |
| Associate Degree Program             |         |  |   | 96  |
| Core Courses—Liberal Arts            |         |  |   |     |
| 21.501,                              | 21.502, | 21.503 Sociology I, II, III                                    | 6                                       |     |
| 26.501,                              | 26.502, | 26.503 Introduction to Philosophy I, II, III                   | 6                                       | 12  |
|                                      |         |  | —                                       |     |
| Core Courses—Business Administration |         |  |   |     |
| 41.504,                              | 41.505, | 41.506 Accounting—Intermediate I, II, III                      | 6                                       |     |
| 41.507,                              | 41.508, | 41.509 Accounting—Cost I, II, III                              | 6                                       |     |
| 44.507,                              | 44.508, | 44.509 Corporate Finance I, II, III                            | 6                                       |     |
| 45.541,                              | 45.542, | 45.543 Law I, II, III*   | 6                                       | 24  |
|                                      |         |  | —                                       |     |
| Major Concentration Courses          |         |  |   |     |
| 41.510,                              | 41.511, | 41.512 Accounting—Advanced I, II, III*                         | 6                                       |     |
| 41.513,                              | 41.514, | 41.515 Accounting—Specialized Problems I, II, III*             | 6                                       |     |
| 41.516,                              | 41.517, | 41.518 Auditing I, II, III*                                    | 6                                       |     |
| 41.519,                              | 41.520, | 41.521 Federal Income Taxes I, II, III*                        | 6                                       |     |
| 41.522,                              | 41.523, | 41.524 Seminar in Contemporary Accounting Problems I, II, III* | 6                                       | 30  |
|                                      |         |  | —                                       |     |
| Electives                            |         |  |   |     |
|                                      |         |  | Liberal Arts                            | 10  |
|                                      |         |  | Business Administration or Liberal Arts | 2   |
|                                      |         |  | —                                       | 12  |
|                                      |         |  |   |     |
| Total Credits                        |         |  |   | 174 |
| Additional Department Offerings      |         |  |   |     |
|                                      | 41.525  | Estate and Gift Taxes  | 2                                       |     |
|                                      | 41.526, | 41.527 Corporate and Stockholder Tax Problems I, II            | 4                                       |     |
|                                      |         | 41.528 Tax Factors in Business Decisions                       | 2                                       |     |
| 41.553,                              | 41.554, | 41.555 Internal Auditing I, II, II                             | 6                                       |     |
| 45.586,                              | 45.587, | 45.588 Systems Design and Techniques I, II, III                | 6                                       |     |
|                                      | 45.618, | 45.619 Retail Data Processing Applications I, II               | 4                                       |     |
|                                      | 45.655, | 45.656 Auditing Data Processing Applications I, II             | 4                                       |     |
|                                      | 45.661, | 45.662 Banking Data Processing Applications I, II              | 4                                       |     |

Please see page 237 for course descriptions.

The following courses are frequently offered as single quarter intensives during the regular school year. Please refer to the current Schedule of Courses and Registration Guide for details.

|         |        |                               | quarter hours |
|---------|--------|-------------------------------|---------------|
| 21.601, | 21.602 | Principles of Sociology I, II | 8**           |

\*Upper level Business Administration course—see page 57.  
 \*\*Additional 2 quarter hours of credit may be applied to Liberal Arts electives.

|        |                         |   |
|--------|-------------------------|---|
| 41.542 | Intermediate Accounting | 6 |
| 41.545 | Auditing                | 6 |
| 44.505 | Corporate Finance       | 6 |
| 45.643 | Law                     | 6 |

**FINANCE****Bachelor of Science Degree**

quarter hours

**Associate Degree Program****96****Core Courses—Liberal Arts**

|         |         |        |                                       |   |           |
|---------|---------|--------|---------------------------------------|---|-----------|
| 21.501, | 21.502, | 21.503 | Sociology I, II, III                  | 6 |           |
| 26.501, | 26.502, | 26.503 | Introduction to Philosophy I, II, III | 6 |           |
|         | 39.517, | 39.518 | Money and Banking I, II               | 4 |           |
|         |         | 39.519 | Public Finance                        | 2 | <b>18</b> |
|         |         |        |                                       | — |           |

**Core Courses—Business Administration**

|         |         |        |                                    |   |           |
|---------|---------|--------|------------------------------------|---|-----------|
| 41.504, | 41.505, | 41.506 | Accounting—Intermediate I, II, III | 6 |           |
| 44.507, | 44.508, | 44.509 | Corporate Finance I, II, III       | 6 |           |
| 44.521, | 44.522, | 44.523 | Credit Management I, II, III*      | 6 |           |
| 45.541, | 45.542, | 45.543 | Law I, II, III*                    | 6 | <b>24</b> |
|         |         |        |                                    | — |           |

**Major Concentration Courses—Students Specializing in Savings Banking and Real Estate:**

|         |         |        |                                     |   |           |
|---------|---------|--------|-------------------------------------|---|-----------|
|         |         | 39.561 | Urban Economics                     | 2 |           |
|         |         | 44.513 | Estate Planning*                    | 2 |           |
| 44.517, | 44.518, | 44.519 | Investments I, II, III*             | 6 |           |
|         | 44.554, | 44.555 | Savings Banks and Banking I, II     | 4 |           |
| 47.501, | 47.502, | 47.503 | Real Estate Fundamentals I, II, III | 6 |           |
|         |         | 47.511 | Real Estate Appraisal               | 2 | <b>22</b> |
|         |         |        |                                     | — |           |

**Electives**

|   |    |           |
|---|----|-----------|
| Liberal Arts                            | 4  |           |
| Business Administration or Liberal Arts | 10 | <b>14</b> |
|   |    | —         |

**Total Credits****174****Major Concentration Courses—Students Specializing in Commercial Banking:**

|         |         |        |                                    |   |           |
|---------|---------|--------|------------------------------------|---|-----------|
|         |         | 44.513 | Estate Planning*                   | 2 |           |
| 44.517, | 44.418, | 44.519 | Investments I, II, III*            | 6 |           |
|         | 44.531, | 44.532 | Seminar in Finance I, II*          | 4 |           |
|         | 44.533, | 44.534 | International Finance I, II*       | 4 |           |
|         |         | 44.553 | New Venture Financing              | 2 |           |
|         | 44.556, | 44.557 | Commercial Banks and Banking I, II | 4 | <b>22</b> |

**Electives**

|   |    |           |
|---|----|-----------|
| Liberal Arts                            | 4  |           |
| Business Administration or Liberal Arts | 10 | <b>14</b> |
|   |    | —         |

**Total Credits****174**

\*Upper level Business Administration course—see page 57.

**Major Concentration Courses—Students Specializing in Corporate Finance:**

|         |         |        |                                |   |    |
|---------|---------|--------|--------------------------------|---|----|
| 41.507, | 41.508, | 41.509 | Cost Accounting I, II, III     | 6 |    |
|         |         | 41.528 | Tax Factors in Decision Making | 2 |    |
| 44.517, | 44.518, | 44.519 | Investments I, II, III*        | 6 |    |
|         | 44.531, | 44.532 | Seminar in Finance I, II*      | 4 |    |
|         | 44.533, | 44.534 | International Finance I, II*   | 4 |    |
|         |         | 44.553 | New Venture Financing          | 2 | 24 |

|                  |  |   |  |   |    |
|------------------|--|---|--|---|----|
| <b>Electives</b> |  | Liberal Arts                            |  | 4 |    |
|                  |  | Business Administration or Liberal Arts |  | 8 | 12 |

|                      |  |  |  |  |            |
|----------------------|--|--|--|--|------------|
| <b>Total Credits</b> |  |  |  |  | <b>174</b> |
|----------------------|--|--|--|--|------------|

**Major Concentration Courses—Students Specializing in International Finance:**

|         |         |        |                                    |   |    |
|---------|---------|--------|------------------------------------|---|----|
| 39.523, | 39.524, | 39.525 | Government and Business I, II, III | 6 |    |
|         | 39.528, | 39.529 | International Economics I, II      | 4 |    |
|         |         | 39.571 | European Economic History          | 2 |    |
| 44.517, | 44.518, | 44.519 | Investments I, II, III*            | 6 |    |
|         | 44.531, | 44.532 | Seminar in Finance I, II*          | 4 |    |
|         | 44.533, | 44.534 | International Finance I, II*       | 4 | 26 |

|                  |  |   |  |   |    |
|------------------|--|---|--|---|----|
| <b>Electives</b> |  | Liberal Arts                            |  | 4 |    |
|                  |  | Business Administration or Liberal Arts |  | 6 | 10 |

|                      |  |  |  |  |            |
|----------------------|--|--|--|--|------------|
| <b>Total Credits</b> |  |  |  |  | <b>174</b> |
|----------------------|--|--|--|--|------------|

The following courses are frequently offered as single quarter intensives during the regular school year. Please refer to the current Schedule of Courses and Registration Guide for details.

|         |        |                               | quarter hours |
|---------|--------|-------------------------------|---------------|
| 21.601, | 21.602 | Principles of Sociology I, II | 8**           |
|         | 44.505 | Corporate Finance             | 6             |
|         | 44.535 | Investments                   | 6             |
|         | 44.552 | Personal Finance              | 4             |

**Additional Department Offerings**

|         |         |        |   |   |
|---------|---------|--------|---|---|
| 45.586, | 44.545, | 44.546 | Profit Planning and Control I, II             | 4 |
|         |         | 44.547 | Advanced Financial Problems                   | 2 |
|         |         | 44.548 | Capital Strategy                              | 2 |
|         | 44.550, | 44.551 | Personal Finance I, II                        | 4 |
|         | 45.587, | 45.588 | Systems Design and Techniques I, II, III      | 6 |
|         | 45.616, | 45.653 | Government Data Processing Applications I, II | 4 |
|         |         | 45.643 | Law   | 6 |
|         | 45.655, | 45.656 | Auditing Data Processing Applications I, II   | 4 |
|         | 45.661, | 45.662 | Banking Data Processing Applications I, II    | 4 |
|         | 45.664, | 45.665 | EDP in Property and Casualty I, II            | 4 |

Please see page 245 for course descriptions.

\*Upper level Business Administration course—see page 57.

\*\*Additional 2 quarter hours of credit may be applied to Liberal Arts electives



**INDUSTRIAL MANAGEMENT****Bachelor of Science Degree**

quarter hours

**Associate Degree Program**

96

**Core Courses—Liberal Arts**

|         |         |        |   |   |    |
|---------|---------|--------|---|---|----|
| 10.332, | 10.333, | 10.334 | Mathematics for Business<br>Management I, II, III | 6 |    |
| 16.511, | 16.512, | 16.513 | History of Science and<br>Technology I, II, III   | 6 |    |
| 19.532, | 19.533, | 19.534 | Industrial Psychology I, II, III                  | 6 |    |
| 39.523, | 39.524, | 39.525 | Government and Business I, II, III                | 6 | 24 |

**Core Courses—Business Administration**

|         |         |        |                                 |   |    |
|---------|---------|--------|---------------------------------|---|----|
| 45.541, | 45.542, | 45.543 | Law I, II, III*                 | 6 |    |
| 45.670, | 45.671, | 45.672 | Management of Change I, II, III | 6 | 12 |

**Major Concentration Courses**

|         |         |        |   |   |    |
|---------|---------|--------|---|---|----|
| 45.533, | 45.534, | 45.535 | Management Decisions and<br>Policies I, II, III | 6 |    |
|         | 45.561, | 45.562 | Statistical Quality Control I, II               | 4 |    |
|         |         | 45.563 | Management of Quality Control                   | 2 |    |
| 45.595, | 45.596, | 45.597 | Manufacturing Seminar I, II, III*               | 6 |    |
| 45.623, | 46.624, | 46.625 | Manufacturing Processes I, II, III              | 6 |    |
|         | 45.636, | 45.637 | Production and Inventory Control I, II          | 4 |    |
| 45.638, | 45.639, | 45.640 | Industrial Decision Making I, II, III*          | 6 |    |
|         |         | 45.695 | Materials Management                            | 2 | 36 |

**Electives**

Liberal Arts or Business Administration

6

**Total Credits**

174

**Additional Department Offerings**

|         |         |        |  |   |  |
|---------|---------|--------|--|---|--|
|         |         | 45.519 | Work Methods   | 2 |  |
|         |         | 45.528 | Work Measurement   | 2 |  |
|         |         | 45.522 | Job Evaluation   | 2 |  |
|         | 45.526, | 45.531 | Facilities Planning and Design I, II                           | 4 |  |
|         |         | 45.530 | Standard Data Development                                      | 2 |  |
|         |         | 45.577 | Data Systems Administration                                    | 2 |  |
| 45.586, | 45.587, | 45.588 | Systems Design and Techniques I, II, III                       | 6 |  |
|         |         | 45.620 | Industrial Safety  | 2 |  |
|         |         | 45.626 | Professional Purchasing Techniques                             | 2 |  |
|         | 45.627, | 45.628 | Value Management I, II   | 4 |  |
| 45.685, | 45.686, | 45.687 | Computer Programming for Scientific<br>Applications I, II, III | 6 |  |
|         |         | 45.696 | Principles and Practice of Management                          | 2 |  |

Please see page 252 for course descriptions.

The following courses are frequently offered as single quarter intensives during the regular school year. Please refer to the current Schedule of Courses and Registration Guide for details. (Continued on page 72)

\*Upper level Business Administration course—see page 57.

\*\*Additional 2 quarter hours of credit may be applied to Liberal Arts electives.

|        |                                  | quarter hours |
|--------|----------------------------------|---------------|
| 45.608 | Quality Control                  | 4             |
| 45.643 | Law                              | 6             |
| 45.680 | Production and Inventory Control | 4             |
| 45.692 | Quality Control                  | 6             |

**INDUSTRIAL TECHNOLOGY****Bachelor of Science Degree**

|  |   | quarter hours |            |
|--|---|---------------|------------|
| <b>Engineering or Science Technology Courses</b> |   |               | <b>96</b>  |
| <b>Core Courses—Liberal Arts</b>                 |   |               |            |
| 19.501, 19.502, 19.503                           | Psychology I, II, III                       | 6             |            |
| 21.501, 21.502, 21.503                           | Sociology I, II, III                        | 6             |            |
| 23.501, 23.502, 23.503                           | Western Civilization I, II, III             | 6             |            |
| 30.601, 30.602                                   | Composition and Rhetoric I, II              | 4             |            |
| 30.604, 30.605                                   | Introduction to Literary Forms I, II        | 4             |            |
| 39.501, 39.502, 39.503                           | Economic Principles and Problems I, II, III | 6             | <b>32</b>  |
| <b>Core Courses—Business Administration</b>      |   |               |            |
| 41.501, 41.502, 41.503                           | Accounting Principles I, II, III            | 6             |            |
| 43.514, 43.515                                   | Marketing Fundamentals I, II**              | 4             |            |
| 45.501, 45.502, 45.503                           | Management and Organization I, II, III      | 6             |            |
| 45.541, 45.542, 45.543                           | Law I, II, III*                             | 6             |            |
| 45.561, 45.562                                   | Statistical Quality Control I, II           | 4             |            |
| 45.563   | Management of Quality Control               | 2             |            |
| 45.570, 45.571, 45.572                           | Electronic Data Processing I, II, III       | 6             |            |
| 45.610, 45.611                                   | Labor-Management Relations I, II            | 4             |            |
| 45.673, 45.674                                   | Industrial Processes I, II**                | 4             | <b>42</b>  |
| <b>Electives</b>                                 |   |               |            |
|  | Literature                                  |               | <b>4</b>   |
| <b>Total Credits</b>                             |   |               | <b>174</b> |

The following courses are frequently offered as single quarter intensives during the regular school year. Please refer to the current Schedule of Courses and Registration Guide for details.

|                |                                | quarter hours |
|----------------|--------------------------------|---------------|
| 23.509, 23.510 | Western Civ. A, B              | 6             |
| 30.603         | Composition & Rhetoric         | 4             |
| 30.606         | Introduction to Literary Forms | 4             |
| 41.541         | Accounting Principles          | 6             |
| 45.608         | Quality Control                | 4             |
| 45.643         | Law                            | 6             |
| 45.648         | Electronic Data Processing     | 6             |
| 45.652         | Management and Organization    | 6             |
| 45.690         | Labor Management Relations     | 4             |
| 45.692         | Quality Control                | 6             |

\*Upper level Business Administration course—see page 57.

\*\*Course substitutions may not be affected.

**INSURANCE****Bachelor of Science Degree**

|   |         |        |  | quarter hours |            |
|---|---------|--------|--|---------------|------------|
| <b>Associate Degree Program</b>             |         |        |  |               | <b>96</b>  |
| <b>Core Courses—Liberal Arts</b>            |         |        |  |               |            |
| 21.501,                                     | 21.502, | 21.503 | Sociology I, II, III                       | 6             |            |
| 26.501,                                     | 26.502, | 26.503 | Introduction to Philosophy I, II, III      | 6             |            |
|   | 39.517, | 39.518 | Money and Banking I, II                    | 4             |            |
|   |         | 39.519 | Public Finance                             | 2             | <b>18</b>  |
|   |         |        |  | —             |            |
| <b>Core Courses—Business Administration</b> |         |        |  |               |            |
|   | 44.511, | 44.512 | Life Insurance I, II                       | 4             |            |
| 44.514,                                     | 44.515, | 44.516 | Property and Casualty Insurance I, II, III | 6             |            |
| 45.541,                                     | 45.542, | 45.543 | Law I, II, III*                            | 6             | <b>16</b>  |
|   |         |        |  | —             |            |
| <b>Major Concentration Courses</b>          |         |        |  |               |            |
|   |         | 44.513 | Estate Planning*                           | 2             |            |
|   | 44.525, | 44.526 | Health and Social Insurance I, II*         | 4             |            |
|   |         | 44.527 | Group Insurance and Pensions               | 2             |            |
|   |         | 44.529 | Advanced Property Insurance*               | 2             |            |
|   |         | 44.530 | Advanced Property—Casualty Insurance*      | 2             |            |
|   |         | 44.543 | Law of Insurance*                          | 2             | <b>14</b>  |
|   |         |        |  | —             |            |
| <b>Electives</b>                            |         |        |  |               |            |
|   |         |        | Liberal Arts                               | 4             |            |
|   |         |        | Business Administration or Liberal Arts    | 26            | <b>30</b>  |
|   |         |        |  | —             |            |
| <b>Total Credits</b>                        |         |        |  |               | <b>174</b> |
| <b>Additional Department Offerings</b>      |         |        |  |               |            |
|   | 45.664, | 45.665 | EDP in Property and Casualty I, II         | 4             |            |

The following courses are frequently offered as a single quarter intensive during the regular school year. Please refer to the current Schedule of Courses and Registration Guide for details.

|         |        |                               |     |
|---------|--------|-------------------------------|-----|
| 21.601, | 21.602 | Principles of Sociology I, II | S** |
|         | 45.643 | Law                           | 6   |

Please see page 249 for course descriptions.

\*Upper level Business Administration course—see page 57.

\*\*Additional 2 quarter hours of credit may be applied to Liberal Arts electives.

**MANAGEMENT****Bachelor of Science Degree**

|   |         |   |  | quarter hours |            |
|---|---------|---|--|---------------|------------|
| <b>Associate Degree Program</b>             |         |   |  |               | <b>96</b>  |
| <b>Core Courses—Liberal Arts</b>            |         |   |  |               |            |
| 21.501,                                     | 21.502, | 21.503                                  | Sociology I, II, III                                   | 6             |            |
| 26.501,                                     | 26.502, | 26.503                                  | Introduction to Philosophy I, II, III                  | 6             |            |
| 30.511,                                     | 30.512, | 30.513                                  | Business Writing and Reports I, II, III                | 6             |            |
| 39.531,                                     | 39.532, | 39.533                                  | Business Cycles I, II, III                             | 6             | <b>24</b>  |
|   |         |   |  | —             |            |
| <b>Core Courses—Business Administration</b> |         |   |  |               |            |
| 44.507,                                     | 44.508, | 44.509                                  | Corporate Finance I, II, III                           | 6             |            |
| 45.541,                                     | 45.542, | 45.543                                  | Law I, II, III*  | 6             | <b>12</b>  |
|   |         |   |  | —             |            |
| <b>Major Concentration Courses</b>          |         |   |  |               |            |
| 19.532,                                     | 19.533, | 19.534                                  | Industrial Psychology I, II, III*                      | 6             |            |
| 41.533,                                     | 41.534, | 41.535                                  | Accounting for Management<br>Decisions I, II, III      | 6             |            |
| 43.532,                                     | 43.533, | 43.534                                  | Marketing Management I, II, III*                       | 6             |            |
| 45.523,                                     | 45.524, | 45.525                                  | Management Seminar I, II, III*                         | 6             |            |
| 45.533,                                     | 45.534, | 45.535                                  | Management Decisions and<br>Policies I, II, III*       | 6             | <b>30</b>  |
|   |         |   |  | —             |            |
| <b>Electives</b>                            |         | Business Administration or Liberal Arts |  |               | <b>12</b>  |
|   |         |   |  |               | —          |
| <b>Total Credits</b>                        |         |   |  |               | <b>174</b> |
| <b>Additional Department Offerings</b>      |         |   |  |               |            |
|   |         | 45.577                                  | Data Systems Administration                            | 2             |            |
| 45.586,                                     | 45.587, | 45.588                                  | Systems Design and Techniques I, II, III               | 6             |            |
|   | 45.603, | 45.604                                  | Administrative Management and Office<br>Services I, II | 4             |            |
|   | 45.616, | 45.653                                  | Government Data Processing<br>Applications I, II       | 4             |            |
|   | 45.618, | 45.619                                  | Retail Data Processing Applications I, II              | 4             |            |
|   | 45.655, | 45.656                                  | Auditing Data Processing<br>Applications I, II         | 4             |            |
|   | 45.661, | 45.662                                  | Banking Data Processing<br>Applications I, II          | 4             |            |
|   | 45.664, | 45.665                                  | EDP in Property and Casualty I, II                     | 4             |            |
|   |         | 45.667                                  | Project Planning and Control                           | 2             |            |
| 45.670,                                     | 45.671, | 45.672                                  | Management of Change I, II, III                        | 6             |            |
|   |         | 45.696                                  | Principles and Practice of Management                  | 2             |            |
|   | 49.504, | 49.505                                  | Strategy for Planning I, II                            | 6             |            |

Please see page 250 for course descriptions.

\*Upper level Business Administration course—see page 57.

The following courses are frequently offered as single quarter intensives during the regular school year. Please refer to the current Schedule of Courses and Registration Guide for details.

|                |                                     |     |
|----------------|-------------------------------------|-----|
| 21.601, 21.602 | Principles of Sociology I, II       | 8** |
| 41.543         | Accounting for Management Decisions | 6   |
| 44.505         | Corporate Finance                   | 6   |
| 45.643         | Law                                 | 6   |

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\*\*Additional 2 quarter hours of credit may be applied towards Liberal Arts electives.

# MANAGEMENT INFORMATION SYSTEMS

## Bachelor of Science Degree

|   |         |        |   | quarter hours |            |
|---|---------|--------|---|---------------|------------|
| <b>Associate Degree Program</b>             |         |        |   | <b>96</b>     |            |
| <b>Core Courses—Liberal Arts</b>            |         |        |   |               |            |
| 21.501,                                     | 21.502, | 21.503 | Sociology I, II, III  | 6             |            |
| 26.501,                                     | 26.502, | 26.503 | Introduction to Philosophy I, II, III                       | 6             |            |
| 30.511,                                     | 30.512, | 30.513 | Business Writing and Reports I, II, III                     | 6             | <b>18</b>  |
| <b>Core Courses—Business Administration</b> |         |        |   |               |            |
| 43.501,                                     | 43.502, | 43.503 | Introduction to Marketing I, II, III                        | 6             |            |
| 44.507,                                     | 44.508, | 44.509 | Corporate Finance I, II, III                                | 6             |            |
|   | 45.511, | 45.512 | Human Relations in Organizations I, II                      | 4             |            |
| 45.541,                                     | 45.542, | 45.543 | Law I, II, III*   | 6             |            |
|   | 45.610, | 45.611 | Labor Management Relations I, II                            | 4             | <b>26</b>  |
| <b>Major Concentration Courses</b>          |         |        |   |               |            |
| 45.589,                                     | 45.590, | 45.591 | Advanced Systems Design I, II, III*                         | 6             |            |
| 45.592,                                     | 45.593, | 45.594 | Advanced Systems Techniques I, II, III*                     | 6             |            |
|   |         | 45.630 | Introduction to Operations Research                         | 2             |            |
|   | 45.631, | 45.632 | Operations Research Applications I, II*                     | 4             |            |
|   | 45.668, | 45.669 | Peripheral Systems Techniques I, II                         | 4             | <b>22</b>  |
| <b>Electives</b>                            |         |        |   |               |            |
|   |         |        | Liberal Arts  | 2             |            |
|   |         |        | Business Administration or Liberal Arts                     | 10            | <b>12</b>  |
| <b>Total Credits</b>                        |         |        |   |               | <b>174</b> |
| <b>Additional Department Offerings</b>      |         |        |   |               |            |
| 45.685,                                     | 45.686, | 45.687 | Computer Programming for Scientific Applications I, II, III | 6             |            |
|   | 45.616, | 45.653 | Government Data Processing Applications I, II               | 4             |            |
| 45.617,                                     | 45.618, | 45.619 | Advanced Comp. Programming I, II, III                       | 6             |            |
|   | 45.655, | 45.656 | Audit. Data Processing Applications I, II                   | 4             |            |
|   | 45.658, | 45.659 | Retail Data Processing Applications I, II                   | 4             |            |
|   | 45.661, | 45.662 | Banking Data Processing Applications I, II                  | 4             |            |
|   | 45.664, | 45.665 | EDP in Property and Casualty Insurance I, II                | 4             |            |
| 45.677,                                     | 45.678, | 45.679 | Operating Systems I, II, III                                | 6             |            |
| 45.680,                                     | 45.681, | 45.682 | Computer Communications Systems I, II, III                  | 6             |            |
|   | 45.697, | 45.698 | Information Processing in Medicine                          | 4             |            |
|   |         | 49.530 | Privacy and Security  | 2             |            |
|   |         | 49.531 | Data Base Management  | 2             |            |
| 49.532,                                     | 49.533, | 49.534 | Mini Computers I, II, III                                   | 6             |            |
|   | 49.504, | 49.505 | Strategy for Planning I, II                                 | 6             |            |

Please see page 263 for course descriptions.

\*Upper level Business Administration course—see page 57.

The following courses are frequently offered as single quarter intensives during the regular school year. Please refer to the current Schedule of Courses and Registration Guide for details.

|                |                                 |     |
|----------------|---------------------------------|-----|
| 21.601, 21.602 | Principles of Sociology I, II   | 8** |
| 43.504         | Introduction to Marketing       | 6   |
| 44.505         | Corporate Finance               | 6   |
| 45.641         | Human Relations in Organization | 4   |
| 45.643         | Law                             | 6   |
| 45.690         | Labor Management Relations      | 4   |
| 49.535         | Auditing Data Processing        | 4   |
| 45.690         | Labor Management Relations      | 4   |

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\*\*Additional 2 quarter hours of credit may be applied towards Liberal Arts electives.

**MARKETING****Bachelor of Science Degree**

|   |         |        |   |    | quarter hours |            |
|---|---------|--------|---|----|---------------|------------|
| <b>Associate Degree Program</b>             |         |        |   |    |               | <b>96</b>  |
| <b>Core Courses—Liberal Arts</b>            |         |        |   |    |               |            |
| 21.501,                                     | 21.502, | 21.503 | Sociology I, II, III  | 6  |               |            |
| 26.501,                                     | 26.502, | 26.503 | Introduction to Philosophy I, II, III                       | 6  | <b>12</b>     |            |
|   |         |        |   |    | —             |            |
| <b>Core Courses—Business Administration</b> |         |        |   |    |               |            |
| 43.518,                                     | 43.519, | 43.522 | Retailing & Mass Merchandising I, II, III                   | 6  |               |            |
| 45.541,                                     | 45.542, | 45.543 | Law I, II, III*   | 6  | <b>12</b>     |            |
|   |         |        |   |    | —             |            |
| <b>Major Concentration Courses</b>          |         |        |   |    |               |            |
| 43.507,                                     | 43.508, | 43.509 | Sales Management I, II, III                                 | 6  |               |            |
|   |         | 43.520 | Industrial Marketing  | 2  |               |            |
|   | 43.525, | 43.526 | Market Research I, II*                                      | 4  |               |            |
|   |         | 43.529 | International Marketing                                     | 2  |               |            |
| 43.532,                                     | 43.533, | 43.534 | Marketing Management I, II, III*                            | 6  |               |            |
|   |         | 43.537 | Marketing and Sales Seminar*                                | 2  |               |            |
| 43.546,                                     | 43.547, | 43.548 | Advertising and Sales Promotion Management I, II, III       | 6  | <b>28</b>     |            |
|   |         |        |   |    | —             |            |
| <b>Electives</b>                            |         |        | Liberal Arts  | 10 |               |            |
|   |         |        | Business Administration or Liberal Arts                     | 16 | <b>26</b>     |            |
|   |         |        |   |    | —             | —          |
| <b>Total Credits</b>                        |         |        |   |    |               | <b>174</b> |
| <b>Additional Department Offerings</b>      |         |        |   |    |               |            |
|   |         | 43.530 | Consumer Behavior Seminar                                   | 2  |               |            |
|   |         | 43.536 | Introduction to Advertising                                 | 2  |               |            |
|   | 43.541, | 43.542 | Public Relations I, II                                      | 4  |               |            |
|   | 43.543, | 43.544 | Salesmanship I, II  | 4  |               |            |
|   |         | 43.545 | Product Management and Development                          | 2  |               |            |
|   |         | 45.577 | Data Systems Administration                                 | 2  |               |            |
|   | 45.618, | 45.619 | Retail Data Processing Applications I, II                   | 4  |               |            |
| 45.685,                                     | 45.686, | 45.687 | Computer Programming for Scientific Applications I, II, III | 6  |               |            |
|   | 49.504, | 49.505 | Strategy for Planning I, II                                 | 6  |               |            |
|   |         | 49.506 | Consumer Education  | 2  |               |            |

Please see page 241 for course descriptions.

The following courses are frequently offered as a single quarter intensive during the regular school year. Please refer to the current Schedule of Courses and Registration Guide for details.

|                |                               |            |
|----------------|-------------------------------|------------|
| 21.601, 21.602 | Principles of Sociology I, II | <b>8**</b> |
| 45.643         | Law                           | 6          |

\*Upper level Business Administration course—see page 57.

\*\*Additional 2 quarter hours of credit may be applied towards Liberal Arts electives.



**PERSONNEL AND INDUSTRIAL  
RELATIONS****Bachelor of Science Degree**

|   |         |        |   | quarter hours |            |
|---|---------|--------|---|---------------|------------|
| <b>Associate Degree Program</b>             |         |        |   |               | <b>96</b>  |
| <b>Core Courses—Liberal Arts</b>            |         |        |   |               |            |
| 21.501,                                     | 21.502, | 21.503 | Sociology I, II, III                    | 6             |            |
| 26.501,                                     | 26.502, | 26.503 | Introduction to Philosophy I, II, III   | 6             | <b>12</b>  |
|   |         |        |   | —             |            |
| <b>Core Courses—Business Administration</b> |         |        |   |               |            |
| 45.541,                                     | 45.542, | 45.543 | Law I, II, III*                         | 6             | <b>6</b>   |
|   |         |        |   | —             |            |
| <b>Major Concentration Courses</b>          |         |        |   |               |            |
| 45.513,                                     | 45.514, | 45.515 | Personnel Management I, II, III         | 6             |            |
|   |         | 45.517 | Techniques of Employee Selection        | 2             |            |
|   |         | 45.518 | Wage and Salary Administration*         | 2             |            |
|   |         | 45.521 | Employee Benefits and Social Security   | 2             |            |
|   |         | 45.522 | Job Evaluation                          | 2             |            |
|   |         | 45.545 | Law of Employment Standards*            | 2             |            |
|   |         | 45.546 | Law of Employment Conditions*           | 2             |            |
|   |         | 45.548 | Law of Labor Management Relations*      | 2             |            |
|   |         | 45.553 | The Labor Agreement*                    | 2             |            |
|   |         | 45.556 | Negotiation, Mediation, Arbitration*    | 2             |            |
|   |         | 45.560 | Seminar on Labor Issues*                | 2             | <b>26</b>  |
|   |         |        |   | —             |            |
| <b>Electives</b>                            |         |        | Liberal Arts                            | 10            |            |
|   |         |        | Business Administration or Liberal Arts | 24            | <b>34</b>  |
|   |         |        |   | —             | —          |
| <b>Total Credits</b>                        |         |        |   |               | <b>174</b> |
| <b>Additional Department Offerings</b>      |         |        |   |               |            |
|   |         | 45.552 | Advanced Human Relations                | 2             |            |
| 45.670,                                     | 45.671, | 45.672 | Management of Change I, II, III         | 6             |            |
|   |         | 45.691 | Creative Problem Solving                | 2             |            |
| 49.536,                                     | 49.537, | 49.538 | Group Dynamics I, II, III               | 6             |            |
|   |         | 49.539 | International Labor Relations           | 2             |            |
|   | 49.504, | 49.505 | Strategy for Planning I, II             | 6             |            |

Please see page 257 for course descriptions.

The following courses are frequently offered as single quarter intensives during the regular school year. Please refer to the current Schedule of Courses and Registration Guide for details.

|                |                               |     |
|----------------|-------------------------------|-----|
| 21.601, 21.602 | Principles of Sociology I, II | 8** |
| 45.607         | Personnel Management          | 6   |
| 45.643         | Law                           | 6   |

\*Upper level Business Administration course—see page 57.

\*\*Additional 2 quarter hours of credit may be applied towards Liberal Arts electives.

# TRANSPORTATION AND PHYSICAL DISTRIBUTION MANAGEMENT

## Bachelor of Science Degree

|   |         |        |   | quarter | hours      |
|---|---------|--------|---|---------|------------|
| <b>Associate Degree Program</b>   |         |        |   |         | <b>96</b>  |
| <b>Core Courses—Liberal Arts</b>  |         |        |   |         |            |
| 21.501,   | 21.502, | 21.503 | Sociology I, II, III  | 6       | 6          |
|   |         |        |   | —       |            |
| <b>Core Courses—Business Administration</b>   |         |        |   |         |            |
| 43.532,   | 43.533, | 43.534 | Marketing Management I, II, III                                 | 6       |            |
| 45.533,   | 45.534, | 45.535 | Management Decisions & Policies<br>I, II, III                   | 6       |            |
| 45.541,   | 45.542, | 45.543 | Law I, II, III  | 6       |            |
| 48.514,   | 48.515, | 48.516 | Elements of Transportation<br>and Distribution I, II, III       | 6       | 24         |
|   |         |        |   | —       |            |
| <b>Major Concentration Courses—Students specializing<br/>in the Management of Transportation companies:</b> |         |        |   |         |            |
|   |         | 45.553 | The Labor Agreement   | 2       |            |
|   |         | 45.556 | Negotiations, Mediation, Arbitration                            | 2       |            |
| 45.670,   | 45.671, | 45.672 | Management of Change I, II, III                                 | 6       |            |
| 48.534,   | 48.535, | 48.536 | Surface Transportation I, II, III                               | 6       |            |
|   |         | 48.537 | Surface Transportation IV                                       | 2       |            |
| 48.541,   | 48.542, | 48.543 | Air Transportation Management I, II, III                        | 6       |            |
|   | 48.547, | 48.548 | Urban Transportation I, II                                      | 4       |            |
|   |         | 48.549 | Seminar in Selected Topics                                      | 2       |            |
|   |         | 48.600 | Seminar in Northeast<br>Corridor Transportation                 | 2       | 32         |
|   |         |        |   | —       |            |
| <b>Electives</b>  |         |        |   |         |            |
|   |         |        | Liberal Arts  | 10      |            |
|   |         |        | Business Administration   | 6       | 16         |
|   |         |        |   | —       |            |
| <b>Total Credits</b>  |         |        |   |         | <b>174</b> |
| <b>Major Concentration Courses—Students specializing<br/>in Physical Distribution Management:</b>           |         |        |   |         |            |
|   |         | 45.526 | Facilities Planning and Design I                                | 2       |            |
| 45.537,   | 45.538, | 45.539 | Purchasing I, II, III   | 6       |            |
|   | 45.636, | 45.637 | Production and Inventory Control I, II                          | 4       |            |
| 45.638,   | 45.639, | 45.640 | Industrial Decision Making I, II, III                           | 6       |            |
| 48.504,   | 48.505, | 48.506 | Transportation Regulation<br>and Promotion I, II, III           | 6       |            |
| 48.527,   | 48.528, | 48.529 | Traffic Management I, II, III                                   | 6       |            |
|   |         | 48.537 | Surface Transportation IV                                       | 2       |            |
|   |         | 48.538 | Management of Warehouse Operations                              | 2       |            |
|   |         | 48.539 | Organization and Control of<br>Physical Distribution Management | 2       |            |
|   |         | 48.540 | Management Science & Physical<br>Distribution Management        | 2       |            |

|                  |                                   |   |            |
|------------------|-----------------------------------|---|------------|
|                  | 48.549 Seminar in Selected Topics | 2 | <b>40</b>  |
|                  |                                   | — |            |
| <b>Electives</b> | Liberal Arts                      |   | <b>8</b>   |
|                  |                                   | — |            |
|                  | <b>Total Credits</b>              |   | <b>174</b> |

The following courses are frequently offered as single quarter intensives during the regular school year. Please refer to the current Schedule of Courses and Registration Guide for details.

|                |                                  |     |
|----------------|----------------------------------|-----|
| 21.601, 21.602 | Principles of Sociology I, II    | 8** |
| 45.550         | Purchasing                       | 6   |
| 45.643         | Law                              | 6   |
| 45.680         | Production and Inventory Control | 4   |

Please see page 272 for course descriptions.

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\*\*Additional 2 quarter hours of credit may be applied towards Liberal Arts electives.

COMBINED PROGRAM IN LIBERAL ARTS  
AND MANAGEMENT

Bachelor of Science Degree

| LIBERAL ARTS COURSES   |   |     |               |
|------------------------|---|-----|---------------|
| Basic Courses          |   |     | quarter hours |
| 10.327, 10.328, 10.329 | Mathematics I, II, III                      | 6   |               |
| 19.501, 19.502, 19.503 | Psychology I, II, III                       | 6** |               |
| 23.501, 23.502, 23.503 | Western Civilization I, II, III             | 6** |               |
| 30.601, 30.602         | Composition and Rhetoric I, II              | 4** |               |
| 30.604, 30.605         | Introduction to Literary Forms I, II        | 4   |               |
| 39.501, 39.502, 39.503 | Economic Principles and Problems I, II, III | 6** | 32            |
| <hr/>                  |   |     |               |
| Core Courses           |   |     |               |
| 16.501, 16.502, 16.503 | Earth Science I, II, III                    | 6** |               |
| 21.501, 21.502, 21.503 | Sociology I, II, III                        | 6** |               |
| 22.501, 22.502, 22.503 | Principles of Political Science I, II, III  | 6   |               |
| 23.504, 23.505, 23.506 | American History I, II, III                 | 6   |               |
| 26.501, 26.502, 26.503 | Introduction to Philosophy I, II, III       | 6** |               |
| 39.511, 39.512, 39.513 | Statistics I, II, III                       | 6** |               |
| Fine Arts:             | Art, Music or Theatre Arts                  | 6   |               |
| Literature             | English, American, or other in              |     |               |
|                        | Translation                                 | 6   | 48            |
| <hr/>                  |   |     |               |
| Electives              |   |     |               |
|                        | Literature                                  | 4   |               |
|                        | Liberal Arts                                | 18  | 22            |
| <hr/>                  |   |     |               |
| MANAGEMENT COURSES     |   |     |               |
| Core Courses           |   |     |               |
| 41.501, 41.502, 41.503 | Accounting Principles I, II, III            | 6   |               |
| 43.501, 43.502, 43.503 | Introduction to Marketing I, II, III        | 6   |               |
| 44.501, 44.502, 44.503 | Finance and Risk Management I, II, III      | 6   |               |
| 44.507, 44.508, 44.509 | Corporate Finance I, II, III                | 6   |               |
| 45.501, 45.502, 45.503 | Management and Organization I, II, III      | 6   |               |
| 45.511, 45.512         | Human Relations in Organizations I, II      | 4   |               |
| 45.541, 45.542, 45.543 | Law I, II, III*                             | 6   |               |
| 45.570, 45.571, 45.572 | Electronic Data Processing I, II, III       | 6   |               |
| 45.610, 45.611         | Labor Management Relations I, II            | 4   | 50            |
| <hr/>                  |   |     |               |
| Electives              |   |     |               |
|                        | Business Administration                     |     | 22            |
| <hr/>                  |   |     |               |
| Total Credits          |   |     | 174           |

\*Upper level Business Administration course—see page 57.

\*\*These Liberal Arts courses and all of the MANAGEMENT COURSES listed above are frequently offered as single quarter intensives during the regular school year. Please refer to the current schedule of Courses and Registration Guide for details. Any Liberal Arts courses taken as intensive for 8 quarter hours of credit will permit applying the additional 2 quarter hours to the Liberal Arts electives.

# liberal arts

**Harold Naidus**, Associate Dean  
Director, Liberal Arts Programs  
Telephone 437-2416

## **Aims**

In providing the means to a modern liberal education, University College has the main objective of stimulating and guiding the self-development of the student in three main areas: first, his intellectual growth; second, the development of his character and sense of values; and third, his preparation for, or advancement in, a career.

Intellectual growth—the development of the ability to think independently and creatively—rests upon the foundation of a sound general education. Through the liberal arts curricula, students are guided toward an appreciative understanding of the active discovery of ideas and methods in the areas of humanities, natural science, and social science. With this training, the student can more fully realize the basic values upon which civilization rests and can more fully participate in the intellectual, moral, and material achievement of that civilization.

Through its many programs, University College endeavors to provide experiences conducive to the development of strength of character and a sense of personal responsibility, including such personal qualities as self-reliance, integrity, perseverance, and the ability to work with others.

University College holds that there is no inconsistency between a truly liberal education and preparation for a vocation. As an adventure in intellectual discovery, a liberal education leads to the broadening and intensification of interests as the student becomes aware of his own mental strengths and weaknesses. This discovery is essential for making more intelligent and realistic appraisals of himself and his career. His career brings meaning and focus to his educational experience. His education presents both a challenge to accept responsibility and an opportunity to seek knowledge and skills for himself.

## **Methods**

To enable each student to plan a college program in keeping with his own interests and aptitudes, a wide range of electives is offered. This

does not mean that students are free to elect courses indiscriminately, for if they are to obtain a liberal education they must have training in several basic fields.

Therefore, the Curriculum Committee of University College has established basic minimum requirements in each of several fields. These distribution requirements are outlined with each of the program offerings.

## **Bachelors Degrees**

### *Bachelor of Arts*

Matriculating students must indicate their choice of degree programs, if the major department offers the option.

Major fields of study are offered in Economics, English, Art, Political Science, History, Psychology, Sociology-Anthropology, and Music. Students should choose their major field of study and their electives in consultation with a program adviser.

The distribution requirements, including specific required courses are shown with each curriculum.

Each curriculum normally provides for not less than 174 quarter hours of work, including at least 40 quarter hours of advanced work in a major field, and at least 30 quarter hours of elective liberal arts courses.

All candidates for the Bachelor of Arts degree must have satisfactorily completed in college one full year of a modern language beyond the elementary level, 4 quarter hours of Composition and Rhetoric and 4 quarter hours of Introduction to Literary Forms.

No student transferring from another college or university is eligible to receive a degree, until at least 46 quarter hours of academic work have been completed at Northeastern University immediately preceding graduation.

### *New Bachelor of Science*

Some departments have elected to offer a **new** B.S. degree, the requirements for which are listed after the B.A. degree in the following pages (unless otherwise stated, the requirements are the same as for the B.A. degree).

## **Chemical-Biological Technology Programs**

Recognizing the need for technicians and technologists in modern society, University College offers the following programs (formerly in Lincoln College):

|                                       |           |
|---------------------------------------|-----------|
| Chemical-Biological Technology (A.S.) | page 105. |
| Chemical-Biological Technology (B.S.) | page 106. |

## The Associate in Science Degree

The program leading to the Associate degree is offered for those desiring a general cultural background in the liberal arts and humanities, but who do not wish to pursue a major field of concentration for the baccalaureate degree.

Candidates for the Associate in Science degree in Liberal Arts must complete a minimum of 96 quarter hours of credit. This is approximately one half of the requirements (174 quarter hours) for the Bachelor of Science degree.

To provide a balanced program which will achieve the established objectives, the faculty has set a minimum credit requirement in the several areas of study as listed under each major.

## Distribution Requirements

For the purpose of satisfying the distribution requirements in all Liberal Arts Majors:

*Math-Science* includes only courses in Mathematics (10....), Physics (11....), Chemistry (12....), Earth Science (16....), Biology (18....), and Psychology (lab. courses only) (19....).

*Humanities* includes only courses in Art (27....), Speech and Theatre Arts (29....), English (except *required*) (30....), Journalism (38....), Modern Languages (except required elementary or conversational) (31.... to 34....), Philosophy (26....), and Music (28....).

*Social Sciences* includes only courses in Economics (39....), History (23....), Political Science (22....), Psychology (except laboratory courses) (19....), Social Welfare (25....), and Sociology-Anthropology (20.... and 21....).

## English Requirement

The 8 quarter hours of *required* English\* must be taken prior to matriculation. These are required courses which cannot be used to satisfy distribution requirements in any liberal arts course of study.

|  |        |
|--|--------|
| 30.601, 30.602, (or 30.603) Composition and Rhetoric I, II,<br>(or Intensive)      | 4 q.h. |
| 30.604, 30.605, (or 30.606) Introduction to Literary Forms<br>I, II (or Intensive) | 4 q.h. |

\*For new English requirements see explanation on p. 220.

## **Honors Program**

An upperclass honors program is provided in University College to enable superior students to develop their potential to the highest degree by making it possible for them to pursue studies in their major fields to greater depth than is possible in the regular courses.

The nature of the program is determined by the academic department concerned. Programs may involve any of the following elements: special research projects culminating in honor theses, seminars, reading projects, directed independent study, or creative work. Flexibility is the keynote, with every consideration given to the individual needs and requirements of the student.

Students who have earned 96 quarter hours of credit toward their Bachelor's degree and who have a grade-point average of 3.0 or better are eligible to apply to the Director of Liberal Arts in University College for admission to the program. Acceptance as an honors candidate rests with the academic department concerned.

## **Acceptance of Credits by the College of Liberal Arts\***

The College of Liberal Arts permits its students to enroll for credit in all courses in University College offered on a quarterly basis, when they are pertinent to the student's program and have been approved by the Dean of the College of Liberal Arts. The credits for such courses may be applied:

1. To the total number of credits needed for graduation
2. To satisfy distribution requirements
3. To fulfill language and major deficiencies

Credits from University College, as well as those from other accredited institutions, may not be applied to the quality point average of students in the College of Liberal Arts except when such credits are from courses taken as substitutes for those College of Liberal Arts courses failed by students. In such instances students must receive a grade of C or better in the University College courses and then only 2.0 quality points are applied to the student's record for each course. Courses taken in University College which are not offered in the Liberal Arts College, may be transferred with the full grade upon approval of the major department.

## **Transfer of Students to the College of Liberal Arts\***

Those students enrolled in University College who wish to transfer to the College of Liberal Arts must apply through the Department of Admissions of the Basic Colleges.

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\*One of the Basic (day) Colleges of Northeastern University.



### **Advanced Standing Credit—Credit for Non-Collegiate Experience (NCE)**

A matriculated Liberal Arts student with a departmental major in University College may obtain up to 16 quarter hours of credit (excluding CLEP credit) for knowledge acquired in a non-traditional manner.

The student will petition his major adviser (with a copy to the Director of Admissions) for such credit, listing the Liberal Arts course(s), as well as the reasons, for which he feels he should receive credit. He may also petition for credit for subject matter which has no counterpart course in University College. The major adviser will contact the consultant of the appropriate Liberal Arts department to arrange for an appraisal of the student's credentials. At the discretion of the department, this appraisal may or may not include a formal examination. Upon receipt of the consultant's recommendation, the student may request the Director of Admissions to inform him of the status of his petition.

In order to plan their last year and to expedite the evaluation of their petition for NCE credit, students planning to graduate during a particular year are urged to submit petitions prior to June 1 of the year preceding graduation. No petitions can be considered after February 1 for June graduation or after March 1 for September graduation.

In no case will this credit be considered as partial fulfillment of the residence requirement nor will a grade be assigned.

No credit will be assigned in this manner for courses which can be accredited through the CLEP testing program at the time of the petition.

Wherever possible, credit will be assigned for specific courses.

It is possible that this credit may be applicable toward a degree in University College only.

### **Field Work Courses**

To provide the opportunity for a student to apply his academic background to practical problems, several departments have introduced courses in their curriculum entitled "Field Work in . . ."

A field work course shall have the following characteristics (as voted by the Curriculum Committee):

1. It shall be a one quarter course worth six quarter hours of credit.
2. Only matriculated majors within the department offering the course may register.
3. The prerequisites shall be departmentally established.

4. Each student shall make his own arrangement for carrying on suitable field work at a departmentally acceptable organization involving departmentally acceptable field work experience(s). The department will participate in student placement only in an advisory capacity.
5. Each student shall spend a minimum of fifteen hours per week at the outside organization on a volunteer or paid basis.
6. Each student shall meet with the departmental field work adviser as frequently as the adviser feels necessary but, in any case, no fewer than three times per quarter (once to formulate the program of field work experience, once to discuss ongoing work and once to transmit and discuss the final written report).
7. The student's grade shall be dependent upon both the quality of the experience as demonstrated in the final report and the discussions between the U.C. field work adviser and the outside supervisor.
8. So long as one student registers, the course will not be cancelled.
9. The outside supervisor will be offered a transferrable voucher for a tuition-free course at Northeastern University.

Prior to registration, each student should consult with his major department.

All field work courses will be numbered as follows: —.699.

**ECONOMICS****Bachelor of Arts Degree**

(Students who matriculated prior to September 1973 must petition the UC Admissions Office for this degree.)

**Distribution Requirements**—(see page 85 for courses included in the three categories listed below:)

|                 | quarter hours |           |
|-----------------|---------------|-----------|
| Math-Science    | 16            |           |
| Humanities      | 24            |           |
| Social Sciences | 24            | <b>64</b> |
|                 | —             |           |

**Liberal Arts Program Requirements**

|                             |  |    |           |
|-----------------------------|--|----|-----------|
| *30.601, 30.602 (or 30.603) | Composition & Rhetoric I, II<br>(or Intensive)         | 4  |           |
| *30.604, 30.605 (or 30.606) | Introduction to Literary Forms I, II<br>(or Intensive) | 4  |           |
| Modern Language:            | Elementary or Conversational                           | 12 |           |
|                             | Intermediate   | 12 | <b>32</b> |
|                             |  | —  |           |

**Major Concentration Courses—required**

|                        |  |   |  |
|------------------------|--|---|--|
| 39.507, 39.508, 39.509 | Intermediate Economic Theory I, II, III  | 6 |  |
| 39.511, 39.512, 39.513 | Statistics I, II, III                    | 6 |  |
| 39.517, 39.518         | Money and Banking I, II                  | 4 |  |
|                        | 39.519 Public Finance                    | 2 |  |
|                        | 39.521 Economic Growth and Development I | 2 |  |
|                        | 39.523 Government and Business I         | 2 |  |
|                        | 39.527 Labor Economics                   | 2 |  |
| 39.528, 39.529         | International Economics I, II            | 4 |  |
|                        | 39.530 Comparative Economic Systems      | 2 |  |
| 39.531, 39.532         | Business Cycles I, II                    | 4 |  |
|                        | 39.581 Economic Policy Seminar           | 2 |  |

The remaining twelve hours must be taken from the following courses:

|                 |        |                                    |   |           |
|-----------------|--------|------------------------------------|---|-----------|
|                 | 39.522 | Economic Growth and Development II | 2 |           |
| 39.524,         | 39.526 | Government and Business II, III    | 4 |           |
|                 | 39.525 | American Economic History          | 2 |           |
|                 | 39.533 | Business Cycles III                | 2 |           |
| 39.536, 39.537, | 39.538 | Advanced Statistics I, II, III     | 6 |           |
|                 | 39.539 | Managerial Economics               | 2 |           |
|                 | 39.540 | History of Economic Thought        | 2 |           |
|                 | 39.551 | Industrial Organization            | 2 |           |
|                 | 39.561 | Urban Economics                    | 2 |           |
|                 | 39.571 | European Economic History          | 2 | <b>48</b> |
|                 |        |                                    | — |           |

**Elective\*\*** **30**

**Total Credits** **174**

**Bachelor of Science Degree**

(None offered at this time.)

\*These must be completed prior to matriculation.

\*\*While students may elect courses in their major field in excess of the minimum number required, they are encouraged to elect courses in a variety of fields beyond the major.

**ENGLISH****Bachelor of Arts Degree**

**Distribution Requirements**—(see page 85 for courses included in the three categories listed below:)

|                 | quarter hours |           |
|-----------------|---------------|-----------|
| Math-Science    | 16            |           |
| Humanities      | 24            |           |
| Social Sciences | 24            | <b>64</b> |
|                 | —             |           |

**Liberal Arts Program Requirements**

|                             |  |    |           |
|-----------------------------|--|----|-----------|
| *30.601, 30.602 (or 30.603) | Composition & Rhetoric I, II<br>(or Intensive)         | 4  |           |
| *30.604, 30.605 (or 30.606) | Introduction to Literary Forms<br>I, II (or Intensive) | 4  |           |
| Modern Language:            | Elementary or Conversational                           | 12 |           |
|                             | Intermediate   | 12 | <b>32</b> |
|                             |  | —  |           |

**Major Concentration Courses—required****Preliminary Courses—all courses required**

|                        |                                |   |           |
|------------------------|--------------------------------|---|-----------|
| 30.541, 30.542, 30.543 | English Literature I, II, III  | 6 |           |
| 30.544, 30.545, 30.546 | American Literature I, II, III | 6 |           |
| 30.517                 | Intermediate Writing           | 2 | <b>14</b> |
|                        |                                | — |           |

**Major Figures in English Literature—three courses required**

|                        |                        |   |          |
|------------------------|------------------------|---|----------|
| 30.551, 30.552, 30.553 | Chaucer I, II, III     | 6 |          |
| 30.561                 | Spenser                | 2 |          |
| 30.554, 30.555, 30.556 | Shakespeare I, II, III | 6 |          |
| 30.562                 | Milton                 | 2 | <b>6</b> |
|                        |                        | — |          |

**Major Periods in English Literature—six courses required**

|                        |                                |   |           |
|------------------------|--------------------------------|---|-----------|
| 30.557                 | The 17th Century               | 2 |           |
| 30.558, 30.559         | The 18th Century I, II         | 4 |           |
| 30.571, 30.572, 30.573 | The 19th Century I, II, III    | 6 |           |
| 30.574, 30.575, 30.576 | The 18th-Century English Novel |   |           |
|                        | The 19th-Century English Novel |   |           |
|                        | The 20th-Century English Novel | 6 | <b>12</b> |
|                        |                                | — |           |

**American Literature—three courses required**

|                        |   |   |          |
|------------------------|---|---|----------|
| 30.581, 30.582, 30.583 | The American Short Story;<br>The 19th-Century American Novel<br>The 20th-Century American Novel | 6 |          |
| 30.578                 | Afro-American Literature  | 2 |          |
| 30.584                 | Contemporary American Poetry  | 2 | <b>6</b> |
|                        |   | — |          |

(Continued on opposite page)

\*These must be completed prior to matriculation.

**Literature in Translation—three courses required**

|                        |                                     |   |   |
|------------------------|-------------------------------------|---|---|
| 30.531, 30.532, 30.533 | Western World Literature I, II, III | 6 |   |
| 30.534, 30.535, 30.536 | Western World Literature IV, V, VI  | 6 | 6 |
|                        |                                     | — |   |

**English Electives****8**

**Open Electives.** These may include 30.591, 30.592, 30.593 Honors Programs I, II, III

**26****Total Credits****174****Bachelor of Science Degree**

Unless otherwise stated, requirements are the same as for the B.A. degree.

|                          |      |           |
|--------------------------|------|-----------|
| Modern Language          | None |           |
| <b>English Electives</b> |      | <b>16</b> |
| <b>Open Electives</b>    |      | <b>42</b> |

**FINE ARTS****Bachelor of Arts Degree**

**Distribution Requirements—**(see page 85 for courses included in the three categories listed below:)

|                 | quarter hours |    |
|-----------------|---------------|----|
| Math-Science    | 16            |    |
| Humanities      | 24            |    |
| Social Sciences | 24            | 64 |
|                 |               | —  |

**Liberal Arts Program Requirements**

|                             |  |    |    |
|-----------------------------|--|----|----|
| *30.601, 30.602 (or 30.603) | Composition & Rhetoric I, II<br>(or Intensive)         | 4  |    |
| *30.604, 30.605 (or 30.606) | Introduction to Literary Forms<br>I, II (or Intensive) | 4  |    |
| Modern Language:            | Elementary or Conversational                           | 12 |    |
|                             | Intermediate   | 12 | 32 |
|                             |  | —  |    |

**Major Concentration Courses—required**

|                        |                           |   |
|------------------------|---------------------------|---|
| 27.504, 27.505, 27.506 | History of Art I, II, III | 6 |
|------------------------|---------------------------|---|

In addition to History of Art I, II, III required of all Fine Arts majors, each student will select a minimum of 38 quarter hours in Area I or 39 quarter hours in Area II. (See page 92)

**Bachelor of Science Degree**

Unless otherwise stated, requirements are the same as for the B.A. degree.

|                  |      |           |
|------------------|------|-----------|
| Modern Language  | None |           |
| <b>Electives</b> |      | <b>58</b> |

(Continued on following page.)

\*These must be completed prior to matriculation.

**Area I—Art History Major**

|                 |        |  |    |
|-----------------|--------|--|----|
|                 | 27.507 | Ancient Architecture                     | 2  |
|                 | 27.508 | Medieval and Renaissance Architecture    | 2  |
|                 | 27.509 | European Architecture                    | 2  |
| 27.510,         | 27.511 | Ancient Painting and Sculpture I, II     | 4  |
|                 | 27.512 | Medieval Painting and Sculpture          | 2  |
|                 | 27.514 | European Painting                        | 2  |
| 27.515,         | 27.516 | Modern Painting I, II                    | 4  |
|                 | 27.518 | 20th-Century American Architecture       | 2  |
|                 | 27.519 | 20th-Century European Architecture       | 2  |
|                 | 27.520 | Italian Renaissance Art II               | 2  |
|                 | 27.522 | French Painting                          | 2  |
|                 | 27.523 | English Art                              | 2  |
| 27.524, 27.525, | 27.526 | American Art I, II, III                  | 6  |
|                 | 27.535 | African Art                              | 2  |
|                 | 27.536 | Latin American Art                       | 2  |
|                 | 27.538 | Chinese Art                              | 2  |
|                 | 27.539 | Japanese Art                             | 2  |
|                 | 27.547 | European Graphic Arts                    | 2  |
|                 | 27.560 | Oriental Indian Art                      | 2  |
| 27.587, 27.588, | 27.589 | History of Photography I, II, III        | 6  |
|                 | 27.592 | New York Art Seminar                     | 2  |
|                 | 27.594 | European Art Seminar                     | 2  |
| 27.597, 27.598, | 27.599 | History and Technique of Film I, II, III | 6  |
| 27.600, 27.601, | 27.602 | Honors Program I, II, III                | 12 |
|                 | 27.603 | Mexican Art                              | 2  |

Required:

**Area II—Studio Art Major**

|  |        |                                    |    |
|--|--------|------------------------------------|----|
| 27.541, 27.542,  | 27.543 | Drawing I, II, III                 | 9  |
| 27.561, 27.562,  | 27.563 | Basic Color and Design I, II, III  | 9  |
| Twenty one quarter hours must be taken from the following courses: |        |                                    |    |
| 27.527, 27.528,  | 27.529 | Life Drawing I, II, III            | 9  |
| 27.544, 27.545,  | 27.546 | Graphic Arts I, II, III            | 9  |
| 27.551, 27.552,  | 27.553 | Painting—Basic Level I, II, III    | 9  |
| 27.554, 27.555,  | 27.556 | Painting—Advanced Level I, II, III | 9  |
| 27.557, 27.558,  | 27.559 | Advanced Graphic Arts I, II, III   | 9  |
|  | 27.564 | Advanced Color and Design          | 3  |
| 27.571, 27.572,  | 27.573 | Basic Commercial Design I, II, III | 9  |
|  | 27.574 | Advanced Commercial Design         | 3  |
| 27.600, 27.601,  | 27.602 | Honors Program I, II, III          | 12 |

Electives\*

**Total Credits****44-45****34****174**

\*While students may elect courses in their major field in excess of the minimum number required, they are encouraged to elect courses in a variety of fields beyond the major.

**HISTORY****Bachelor of Arts Degree**

**Distribution Requirements**—(see page 85 for courses included in the three categories listed below:)

|                 | quarter hours |           |
|-----------------|---------------|-----------|
| Math-Science    | 16            |           |
| Humanities      | 24            |           |
| Social Sciences | 24            | <b>64</b> |
|                 | —             |           |

**Liberal Arts Program Requirements**

|                             |  |    |           |
|-----------------------------|--|----|-----------|
| *30.601, 30.602 (or 30.603) | Composition & Rhetoric I, II<br>(or Intensive)         | 4  |           |
| *30.604, 30.605 (or 30.606) | Introduction to Literary Forms<br>I, II (or Intensive) | 4  |           |
| Modern Language             | Elementary or Conversational<br>Intermediate           | 12 |           |
|                             |  | 12 | <b>32</b> |
|                             |  | —  |           |

**Major Concentration Courses—required**

History majors are required to take 6 quarter hours of Western Civilization (23.501, 23.502, 23.503) and 6 quarter hours of the American History survey (23.504, 23.505, 23.506). These 12 credits are applicable to the social science distribution requirements for History majors. **12**

Required in addition are 40 quarter hours of history courses to be distributed as follows:

|   | quarter hours |  |
|---|---------------|--|
| 23.500 Historian's Craft                                      | 4             |  |
| At least 6 quarter hours in each of the following four areas: |               |  |
| I. Ancient Medieval, and Early Modern Europe                  |               |  |
| II. Modern and Contemporary Europe                            |               |  |
| III. American History   |               |  |
| IV. Other Regions   | 24            |  |

(See specific History courses at back of catalog for area designations.)

The remaining 12 quarter hours of history may be chosen from any of the above four areas. Students in the Honors Program (23.597, 23.598, 23.599) may use these 12 quarter hours. **12** **40**

Since September, 1972, some history courses carry 4 quarter hours of credit and may meet twice weekly.

**Electives\*\*** **26**

**Total Credits** **174**

(Continued on following page.)

\*These must be completed prior to matriculation.

\*\*While students may elect courses in their major field in excess of the minimum number required, they are encouraged to elect courses in a variety of fields beyond the major.

**Bachelor of Science Degree**

(Unless otherwise stated, requirements are the same as for the B.A. degree)

**Distribution Requirements—**

|                 | quarter hours |
|-----------------|---------------|
| Math-Science    | None          |
| Humanities      | 24            |
| Social Sciences | None          |
| Modern Language | None          |

**Other Required Courses—**

|                        |                                       |   |    |
|------------------------|---------------------------------------|---|----|
| 39.501, 39.502, 39.503 | Economic Princ. & Problems I, II, III | 6 | 30 |
| 39.511, 39.512, 39.513 | Statistics I, II, III                 | 6 |    |
| 21.501, 21.502, 21.503 | Sociology I, II, III                  | 6 |    |
| 21.512, 21.513, 21.514 | Social Research Methods I, II, III    | 6 |    |
| 45.570, 45.571, 45.572 | Electronic Data Processing I, II, III | 6 |    |

|                  |           |
|------------------|-----------|
| <b>Electives</b> | <b>60</b> |
|------------------|-----------|

**LIBERAL ARTS****Associate in Science Degree**

|                  |        |                                      |  | quarter | hours |
|------------------|--------|--------------------------------------|--|---------|-------|
| Math—Science*    |        |                                      |  | 16      |       |
| Humanities*      |        |                                      |  | 24      |       |
| Social Sciences* |        |                                      |  | 24      |       |
| 30.601,          | 30.602 | Composition and Rhetoric I, II       |  | 4       |       |
| 30.604,          | 30.605 | Introduction to Literary Forms I, II |  | 4       | 72    |

|                  |           |
|------------------|-----------|
| <b>Electives</b> | <b>24</b> |
|------------------|-----------|

|                      |           |
|----------------------|-----------|
| <b>Total Credits</b> | <b>96</b> |
|----------------------|-----------|

\*See page 85 for courses included in the various designations.



**POLITICAL SCIENCE****Bachelor of Arts Degree**

**Distribution Requirements**—(see page 85 for courses included in the three categories listed below):

|                 | quarter hours |           |
|-----------------|---------------|-----------|
| Math-Science    | 16            |           |
| Humanities      | 24            |           |
| Social Sciences | 24            | <b>64</b> |
|                 | —             |           |

**Liberal Arts Program Requirements**

|                             |  |    |           |
|-----------------------------|--|----|-----------|
| *30.601, 30.602 (or 30.603) | Composition & Rhetoric I, II<br>(or Intensive)         | 4  |           |
| *30.604, 30.605 (or 30.606) | Introduction to Literary Forms<br>I, II (or Intensive) | 4  |           |
| Modern Language:            | Elementary or Conversational                           | 12 |           |
|                             | Intermediate   | 12 | <b>32</b> |
|                             |  | —  |           |

**Major Concentration Courses—required** (see page 96)

**Prerequisites:** Principles of Political Science I, II, III (22.501, 22.502, 22.503) which may be taken out of sequence if necessary, or Principles of Political Science (Intensive) (22.507).

**Bachelor of Science Degree**

Unless otherwise stated, requirements are the same as for the BA degree

|                                  |      |
|----------------------------------|------|
| <b>Distribution Requirements</b> | None |
| Modern Language                  | None |

**Additional Requirements—**

|                                     |        |        |        |   |   |
|-------------------------------------|--------|--------|--------|---|---|
| Statistics                          | 10.316 | 10.317 | 10.318 | } | 6 |
|                                     |        | Or     |        |   |   |
|                                     | 19.504 | 19.505 | 19.506 |   |   |
|                                     |        | Or     |        |   |   |
|                                     | 39.511 | 39.512 | 39.513 | } |   |
| Computer Techniques and Programming |        |        |        |   |   |
|                                     | 45.570 | 45.571 | 45.572 |   | 6 |
|                                     | 45.599 |        |        |   | 2 |

**Other Electives** to a total of **174**

(Continued on following page)

\*These must be completed prior to matriculation

Each student will select a minimum of 6 quarter hours from each of the following four areas, as indicated:

**Area I—American Government****quarter hours**

|        |   |   |
|--------|---|---|
| 22.511 | American National Government                  | 2 |
|        | any additional <b>two</b> courses from among: | 4 |
| 22.512 | Urban and Metropolitan Government             | 2 |
| 22.514 | American Constitutional Law                   | 2 |
| 22.515 | Civil Rights                                  | 2 |
| 22.516 | Public Administration I                       | 2 |
| 22.517 | Public Administration II                      | 2 |
| 22.518 | Government and Politics of States             | 2 |
| 22.519 | The Legislative Process                       | 2 |
| 22.520 | The American Presidency                       | 2 |
| 22.551 | Current Political Issues                      | 2 |
| 22.570 | Consumer Advocacy I                           | 2 |
| 22.571 | Consumer Advocacy II                          | 2 |
| 22.572 | Consumer Advocacy III                         | 2 |

**Area II—Comparative Government**

|        |  |   |
|--------|--|---|
| 22.521 | Comparative Government I                       | 2 |
| 22.522 | Comparative Government II                      | 2 |
|        | any additional <b>one</b> course from among:   | 2 |
| 22.537 | European Political Parties                     | 2 |
| 22.544 | Government and Politics in the Soviet Union I  | 2 |
| 22.545 | Government and Politics in the Soviet Union II | 2 |
| 22.547 | Government and Politics of Communist China I   | 2 |
| 22.548 | Government and Politics of Communist China II  | 2 |
| 22.552 | Government and Politics of the Middle East I   | 2 |
| 22.553 | Government and Politics of the Middle East II  | 2 |
| 22.555 | Government and Politics in Latin America I     | 2 |
| 22.556 | Government and Politics in Latin America II    | 2 |
| 22.558 | Government and Politics of Southeast Asia      | 2 |
| 22.559 | Government and Politics of Japan               | 2 |
| 22.560 | Politics and Policies of Developing Nations I  | 2 |
| 22.561 | Politics and Policies of Developing Nations II | 2 |
| 22.562 | Government and Politics of Sub Saharan Africa  | 2 |
| 22.563 | Government and Politics of Northern Africa     | 2 |

**Area III—International Relations**

|        |  |   |
|--------|--|---|
| 22.535 | International Relations (not to be taken by students who have credit for 22.531) | 4 |
|        | any additional <b>one</b> course from among:                                     | 2 |
| 22.532 | International Organization   | 2 |
| 22.534 | Soviet Foreign Policy  | 2 |
| 22.538 | Communist China's Foreign Policy   | 2 |
| 22.541 | International Law  | 2 |
| 22.533 | American Foreign Policy  | 2 |
| 22.542 | American Foreign Policy I  | 2 |
| 22.543 | American Foreign Policy II   | 2 |
| 22.564 | Communism in Eastern Europe I  | 2 |
| 22.565 | Communism in Eastern Europe II   | 2 |

**Area IV—Theory and Methodology**

|        |   |   |
|--------|---|---|
| 22.536 | Introduction to Political Theory (not to be taken by students who have credit for 22.504) | 4 |
|        | any additional <b>one</b> course from among:  | 2 |
| 22.505 | Contemporary Political Theory   | 2 |
| 22.506 | American Political Thought  | 2 |
| 22.508 | Research Methods  | 2 |

**Political Science Electives.** A total of 18 quarter hours of elective courses from any or all of the above areas, and may include the maximum number of quarter hours credit for Honors permitted by the College.

**18**

**Open Electives.** Social Sciences other than Political Science, including not fewer than 6 quarter hours of each of three different disciplines selected from Economics, History, Psychology, and Sociology-Anthropology.

**18****Other Electives****18****Total Credits****174**

**PSYCHOLOGY****Bachelor of Arts Degree**

**Distribution Requirements**—(see page 85 for courses included in the three categories listed below:)

|  | quarter hours  |           |
|--|--|-----------|
| Math-Science                             | 16   |           |
| Humanities                               | 24   |           |
| **Social Sciences                        | 24   | <b>64</b> |
|  | —  |           |
| <b>Liberal Arts Program Requirements</b> |  |           |
| *30.601, 30.602 (or 30.603)              | Composition & Rhetoric I, II<br>or (Intensive)         | 4         |
| *30.604, 30.605 (or 30.606)              | Introduction to Literary Forms<br>I, II (or Intensive) | 4         |
| Modern Language:                         | Elementary or Conversational                           | 12        |
|  | Intermediate   | 12        |
|  | —  | <b>32</b> |

**Major Concentration Courses (page 99)****Bachelor of Science Degree**

Unless otherwise stated, requirements are the same as for the B.A. degree.

**Distribution Requirements—**

|                 |      |
|-----------------|------|
| Math-Science    | 32   |
| Humanities      | None |
| Social Sciences | 20   |
| Modern Language | None |

**Major Concentration Courses—required**

All of the following pairs:

19.514, 19.515; 19.538, 19.540; 19.549, 19.550; 19.580, 19.581

**Psychology Electives** (as listed on the following page) **28**

**Electives** to a total of **174**

(Continued on following page)

\*These must be completed prior to matriculation.

\*\*It is recommended that Psychology majors substitute 19.508 and 19.509—Fundamentals of Psychology I and II for 19.501, 502, and 503.

**Major Concentration Courses—required**

|         |         |        |  |   |
|---------|---------|--------|--|---|
| 19.501, | 19.502, | 19.503 | (or 19.507) Psychology I, II, III          | 6 |
|         |         | OR     |  |   |
| 19.508, | 19.509  |        | Fundamentals of Psychology I, II           | 8 |
|         |         | OR     |  |   |
| 19.518, | 19.519  |        | Foundations of Psychology I, II            | 8 |
| 19.504, | 19.505, | 19.506 | Statistics in Psychology I, II, III        | 6 |
| 19.561, | 19.562  |        | Scientific Foundations of Psychology I, II | 4 |
| 19.571  |         |        | Senior Seminar                             | 2 |

**THREE OF THE FOLLOWING PAIRS:**

|         |        |                                      |   |          |
|---------|--------|--------------------------------------|---|----------|
| 19.514, | 19.515 | Personality I, II (Lab)              | } | 12 30-32 |
| 19.538, | 19.540 | Learning I, II (Lab)                 |   |          |
| 19.549, | 19.550 | Sensation and Perception I, II (Lab) | } | —        |
| 19.580, | 19.581 | Physiological Psychology I, II (Lab) |   |          |

In addition to the courses listed above, required of all Psychology majors, each student will select a minimum of 24 hours from the following Psychology electives:

|         |         |        |                                     |       |
|---------|---------|--------|-------------------------------------|-------|
| 19.511, | 19.512, | 19.513 | Developmental Psychology I, II, III | 6     |
| 19.523  |         |        | Motivation                          | 2     |
| 19.524, | 19.525  |        | Social Psychology I, II             | 4     |
| 19.532, | 19.533, | 19.534 | Industrial Psychology I, II, III    | 6     |
| 19.536  |         |        | Psychology of Thought               | 2     |
| 19.537  |         |        | Psychology of Language              | 2     |
| 19.545  |         |        | Psychological Therapies             | 2     |
| 19.541, | 19.542, | 19.543 | Abnormal Psychology                 | 6     |
| 19.588  |         |        | Drugs and Behavior                  | 2     |
| 19.589  |         |        | Impact of Psychology on Society     | 2     |
| 19.591, | 19.592, | 19.593 | Honors Program I, II, III           | 12 24 |

**Electives\***to a total of **174****Total Credits****174**

\*While students may elect courses in their major field in excess of the minimum number required, they are encouraged to elect courses in a variety of fields beyond the major

**SOCIOLOGY-ANTHROPOLOGY**

**Bachelor of Arts Degree**

**Distribution Requirements**—(see page 85 for courses included in the three categories listed below:)

|  | quarter hours  |              |
|--|--|--------------|
| Math-Science                             | 16   |              |
| Humanities                               | 24   |              |
| Social Sciences                          | 24   | <b>64</b>    |
|  | —  |              |
| <b>Liberal Arts Program Requirements</b> |  |              |
| *30.601, 30.602 (or 30.603)              | Composition & Rhetoric I, II<br>(or Intensive)         | 4            |
| *30.604, 30.605 (or 30.606)              | Introduction to Literary Forms<br>I, II (or Intensive) | 4            |
| Modern Language:                         | Elementary or Conversational                           | 12           |
|  | Intermediate   | 12 <b>32</b> |
|  |  | —            |

**Bachelor of Science Degree**

Unless otherwise stated, requirements are the same for the B.A. degree.

**Distribution Requirements**—

|  |      |
|--|------|
| Math-Science   | None |
| Humanities   | None |
| Social Sciences<br>(other than soc-anthro.)  | 24   |
|  | —    |
| Modern Language  | None |
| For those anticipating work in applied social welfare, it is highly recommended that at least elementary or conversational courses in an appropriate language be mastered. |      |

**Major Concentration Requirements**

Same as for the B.A. degree plus at least 10 additional quarter hours of advanced courses, of which 4 quarter hours should be in anthropology.

**Electives**

**78**

(Students are encouraged to elect math-science and humanities for adequate educational breadth.)

**For students planning to attend graduate school, the B.A. degree is recommended.**

—  
\*These must be completed prior to matriculation.

| <b>Major Concentration Courses—required</b> |                                    |  |  | <b>quarter hours</b> |
|---|------------------------------------|--|--|----------------------|
| 20.501, 20.502, 20.503                      | Anthropology I, II, III            |  |  | 6                    |
| 21.501, 21.502, 21.503                      | Sociology I, II, III               |  |  | 6                    |
| 21.512, 21.513, 21.514                      | Social Research Methods I, II, III |  |  | 6                    |
| 21.517, 21.518, 21.519                      | Social Theory I, II, III           |  |  | 6                    |

The student may choose to substitute for any of the course sequences above more intensive versions under the following numbers and titles:

|                |   |   |
|----------------|---|---|
| 20.601, 20.602 | Principles of Anthropology I, II          | 8 |
| 21.601, 21.602 | Principles of Sociology I, II             | 8 |
| 21.612, 21.613 | Social Research Methods I, II (Intensive) | 8 |
| 21.617, 21.618 | Social Theory I, II (Intensive)           | 8 |

The major is required to take 30 quarter hours of advanced courses from among the following offerings:

|                |   |   |
|----------------|---|---|
| 20.521         | Culture and Personality                                   | 2 |
| 20.531         | Primitive Social Organization                             | 2 |
| 20.532         | Primitive Religion  | 2 |
| 20.533         | Acculturation   | 2 |
| 20.537         | Anthropological Theory                                    | 2 |
| 20.541         | North American Indian                                     | 2 |
| 20.544         | African Peoples and Culture                               | 2 |
| 20.547         | Latin American Peoples and Culture                        | 2 |
| 20.548         | Studying the Family Cross-Culturally                      | 2 |
| 20.549         | Folklore  | 2 |
| 20.550         | Peasant Society and Culture as an Anthropological Problem | 2 |
| 20.551         | The Comparative Study of Changing Peasantries             | 2 |
| 20.552         | Eastern European Peasantry in the Modern World            | 2 |
| 20.560         | Language and Culture                                      | 2 |
| 21.505         | Drugs and Society   | 2 |
| 21.506         | Sociology of Religion                                     | 2 |
| 21.507         | Sex in Society: The Study of Sex Roles                    | 2 |
| 21.508         | Sociology of Literature                                   | 2 |
| 21.509         | Sociology of Socialist Societies                          | 2 |
| 21.528         | Social Stratification                                     | 2 |
| 21.531         | Social Change   | 2 |
| 21.534         | Social Control  | 2 |
| 21.535         | Political Sociology                                       | 2 |
| 21.546         | Sociology of Deviant Behavior                             | 2 |
| 21.547         | Social Problems   | 2 |
| 21.550         | Juvenile Delinquency                                      | 2 |
| 21.551, 21.552 | Family and Marriage I, II                                 | 4 |

(Continued on next page)

|                        |  |    |            |
|------------------------|--|----|------------|
| 21.553, 21.554, 21.555 | Racial and Cultural Relations I, II, III | 6  |            |
| 21.556                 | Sociology of Poverty                     | 2  |            |
| 21.557                 | Urban Sociology                          | 2  |            |
| 21.558                 | Community Analysis                       | 2  |            |
| 21.559                 | Seminar in Urban Studies                 | 2  |            |
| 21.560                 | Medical Sociology                        | 2  |            |
| 21.561                 | Sociology of Mental Health               | 2  |            |
| 21.563                 | Social Gerontology                       | 2  |            |
| 21.567                 | Population                               | 2  |            |
| 21.570                 | Sociology of Occupations and Professions | 2  |            |
| 21.573                 | Sociology of Industry                    | 2  |            |
| 21.575                 | Sociology of Formal Organizations        | 2  |            |
| 21.591, 21.592, 21.593 | Honors Programs I, II, III               | 12 | <b>54</b>  |
| <b>Electives*</b>      |  | —  | <b>24</b>  |
| <b>Total Credits</b>   |  |    | <b>174</b> |

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\*While students may elect courses in their major field in excess of the minimum number required, they are encouraged to elect courses in a variety of fields beyond the major.



**MUSIC****Bachelor of Arts Degree**

**Distribution Requirements**—(see page 85 for courses included in the three categories listed below:)

|                 | quarter hours |           |
|-----------------|---------------|-----------|
| Math-Science    | 16            |           |
| Humanities      | 24            |           |
| Social Sciences | 24            | <b>64</b> |
|                 | —             |           |

**Liberal Arts Program Requirements**

|                             |  |    |           |
|-----------------------------|--|----|-----------|
| *30.601, 30.602 (or 30.603) | Composition & Rhetoric I, II<br>(or Intensive)         | 4  |           |
| *30.604, 30.605 (or 30.606) | Introduction to Literary Forms<br>I, II (or Intensive) | 4  |           |
| Modern Language:            | Elementary or Conversational                           | 12 |           |
|                             | Intermediate   | 12 | <b>32</b> |
|                             |  | —  |           |

**Major Concentration Courses—required**

|                        |                               |   |           |
|------------------------|-------------------------------|---|-----------|
| 28.599, 28.600, 28.601 | Theory I, II, III             | 6 |           |
| 28.605, 28.606, 28.607 | Theory IV, V, VI              | 6 |           |
| 28.608, 28.609,        | Contrapuntal Techniques I, II | 4 |           |
| 28.534, 28.535, 28.536 | Pedagogy of Music I, II, III  | 6 |           |
| 28.602, 28.603, 28.604 | Music History I, II, III      | 6 |           |
| 28.528, 28.529, 28.530 | Ear Training I, II, III       | 6 | <b>34</b> |
|                        |                               | — |           |

**Major Concentration Electives (page 104)****Bachelor of Science Degree**

Unless otherwise stated, requirements are the same as for the B.A. degree.

**Distribution Requirements—**

|                              | quarter hours |           |
|------------------------------|---------------|-----------|
| Math-Science                 | 7             |           |
| Humanities                   | 24            |           |
| Social Sciences              | 24            |           |
| Modern Language:             | 12            | <b>67</b> |
| Elementary or Conversational | —             |           |

**Electives** (May include Honors Program, 28.695, 28.696, 28.697) **29**

(Continued on following page.)

\*These must be completed prior to matriculation.

Major Concentration Courses—elective

|  |  |   |
|--|--|---|
| Five of the following courses should be taken: |  |   |
| 28.503   | Women in Music   | 2 |
| 28.510   | Music and Art  | 2 |
| 28.515   | Contemporary Music                                     | 2 |
| 28.517   | Music as a Means of Social Expression                  | 2 |
| 28.520   | Musical Forms  | 2 |
| 28.521   | The Symphony   | 2 |
| 28.522   | The Concerto   | 2 |
| 28.523   | Great Literature for Piano                             | 2 |
| 28.524   | The World of Opera                                     | 2 |
| 28.525   | Contemporary Opera                                     | 2 |
| 28.526   | Jazz: Evolution and Essence                            | 2 |
| 28.531   | Life and Works of J. S. Bach                           | 2 |
| 28.532   | Life and Works of Mozart                               | 2 |
| 28.533   | Life and Works of Beethoven                            | 2 |
| 28.543   | Great Choral Literature                                | 2 |
| 28.544   | Chamber Music  | 2 |
| 28.545   | Wagner's Ring Cycle                                    | 2 |
| 28.546   | Life and Works of Stravinsky                           | 2 |
| 28.547   | The Music of Bruckner and Mahler                       | 2 |
| 28.548   | Great Love Songs through the Ages                      | 2 |
| 28.549   | A History of Musical Instruments in<br>Western Culture | 2 |
| 28.550   | Life and Works of Haydn                                | 2 |
| 28.551   | Life and Works of Brahms                               | 2 |
| 28.552   | Life and Works of Chopin                               | 2 |
| 28.553   | Melodrama and the Macabre                              | 2 |
| 28.571   | Piano Class I  | 2 |
| 28.572   | Piano Class II   | 2 |
| 28.573   | Piano Class III  | 2 |
| 28.595   | Opera Seminar  | 2 |
| 28.587   | Symphony Seminar                                       | 2 |

|                |     |
|----------------|-----|
| Free Electives | 34  |
| Total Credits  | 174 |

## CHEMICAL-BIOLOGICAL TECHNOLOGY

### Associate in Science Degree

The program in Chemical-Biological Technology provides the chemistry and biology foundation required by medical and industrial laboratory assistants and technicians in clinically, chemically, or biologically oriented organizations, and for persons having paramedical responsibilities. Employment opportunities are in hospitals, health clinics, research foundations, chemical and drug industries, public health organizations, water and sanitation departments, and in the emerging fields of the oceanographic technologies.

*Prerequisite:* Satisfactory completion of the Mathematics Placement Test or the Basic Mathematics I and II courses (10.330 and 10.331). The Mathematics Placement Test must be taken prior to registration.

| First Year           |         |        |   | quarter hours |
|----------------------|---------|--------|---|---------------|
| 10.327,              | 10.328, | 10.329 | Mathematics I, II, III<br>or                | 6             |
| 10.307,              | 10.308  |        | College Algebra & Trigonometry I, II        |               |
| 11.304,              | 11.305, | 11.306 | General Physics I, II, III                  | 6             |
| 12.544,              | 12.545, | 12.546 | General Chemistry I, II, III                | 6             |
| 12.547,              | 12.548, | 12.549 | General Chemistry Lab. I, II, III           | 3             |
| 30.601,              | 30.602  |        | Composition & Rhetoric I, II                | 4             |
|                      |         |        | English Elective                            | 2             |
| Second Year          |         |        |   |               |
| 10.316,              | 10.317, | 10.318 | Probability and Statistics I, II, III<br>or | 6             |
| 10.320,              | 10.321, | 10.322 | Calculus I, II, III                         |               |
|                      |         |        | Social Science Elective I, II, III          | 6             |
| 18.511,              | 18.512, | 18.513 | Biology I, II, III                          | 12            |
| Third Year           |         |        |   |               |
| 12.531,              | 12.532, | 12.533 | Organic Chemistry I, II, III                | 12            |
| 12.534,              | 12.535, | 12.536 | Organic Chemistry Lab. I, II, III<br>or     |               |
| 12.521,              | 12.522, | 12.523 | Analytical Chemistry I, II, III             |               |
| 12.524,              | 12.525, | 12.526 | Analytical Chemistry Lab. I, II, III        |               |
| 18.524,              | 18.525, | 18.526 | Human Anatomy and Physiology I, II, III     | 9             |
|                      |         |        | Humanities Elective I, II, III              | 6             |
| Fourth Year          |         |        |   |               |
| 18.521,              | 18.522, | 18.523 | Microbiology I, II, III                     | 12            |
|                      |         |        | Biology or Chemistry Elective I, II, III    | 6             |
| <b>Total Credits</b> |         |        |   | <b>96-100</b> |

**Note:** Associate degree graduates may transfer applicable credits toward the requirements in Lincoln College programs leading to the Associate in Engineering, Associate in Science, or Bachelor of Engineering Technology degrees, as well as University College programs.

## CHEMICAL-BIOLOGICAL TECHNOLOGY

### Bachelor of Science Degree

The Chemical-Biological Technology program is an interdisciplinary program integrating theoretical and laboratory course sequences from the fields of chemistry and biology which prepare the student to assume responsibilities in laboratory careers which emphasize laboratory application and teaching careers in general science. Employment opportunities are in a wide variety of industrial, pharmaceutical, clinical, and hospital laboratories dealing with analytical, production, and research functions and in secondary school education in the teaching of general science, chemistry, biology, and other related courses.

*Prerequisite:* Satisfactory completion of the Mathematics Placement Test or the Basic Mathematics I and II courses (10.330 and 10.331). The Mathematics Placement Test must be taken prior to registration.

| First Year |         |        |                                       | quarter hours |
|------------|---------|--------|---------------------------------------|---------------|
| 10.316,    | 10.317, | 10.318 | Probability and Statistics I, II, III | } 6           |
|            |         |        | or                                    |               |
| 10.307,    | 10.308  |        | College Algebra & Trigonometry I, II  | } 8           |
| 11.304,    | 11.305, | 11.306 | General Physics, I, II, III           |               |
| 12.544,    | 12.545, | 12.546 | General Chemistry I, II, III          | 6             |
| 12.547,    | 12.548, | 12.549 | General Chemistry Lab. I, II, III     | 3             |
| 30.601,    | 30.602  |        | Composition and Rhetoric, I, II       | 4             |
|            |         |        | English Elective                      | 2             |

| Second Year |         |        |                                       |      |
|-------------|---------|--------|---------------------------------------|------|
| 10.316,     | 10.317, | 10.318 | Probability and Statistics I, II, III | } 8  |
|             |         |        | or                                    |      |
| 10.320,     | 10.321, | 10.322 | Calculus I, II, III                   | } 12 |
| 18.511,     | 18.512, | 18.513 | Biology I, II, III                    |      |
| 23.501,     | 23.502, | 23.503 | Western Civilization I, II, III       | 6    |

| Third Year |         |        |   |   |
|------------|---------|--------|---|---|
| 12.521,    | 12.522, | 12.523 | Analytical Chemistry I, II, III         | 6 |
| 12.524,    | 12.525, | 12.526 | Analytical Chemistry Lab. I, II, III    | 6 |
| 18.524,    | 18.525, | 18.526 | Human Anatomy and Physiology I, II, III | 9 |
| 19.501,    | 19.502, | 19.503 | Psychology I, II, III                   | 6 |

| Fourth Year |         |        |                                   |    |
|-------------|---------|--------|-----------------------------------|----|
| 12.531,     | 12.532, | 12.533 | Organic Chemistry I, II, III      | 6  |
| 12.534,     | 12.535, | 12.536 | Organic Chemistry Lab. I, II, III | 6  |
| 18.521,     | 18.522, | 18.523 | Microbiology I, II, III           | 12 |

| Fifth Year |         |        |                                  |     |
|------------|---------|--------|----------------------------------|-----|
| 18.551,    | 18.552, | 18.553 | Histology-Organology I, II, III  | 6   |
| 39.501,    | 39.502, | 39.503 | Economic Principles and Problems | } 6 |
|            |         |        | I, II, III                       |     |
|            | 12.551, | 12.552 | Instrumental Analysis I, II      | 4   |

|                        |        |  |                         |   |
|------------------------|--------|--|-------------------------|---|
|                        | 12.553 |  | Radiochemistry          | 2 |
| 16.531, 16.532, 16.533 |        |  | Oceanography I, II, III | 6 |

**Sixth Year**

|                                 |                         |               |  |                  |
|---------------------------------|-------------------------|---------------|--|------------------|
| 18.561, 12.541, 12.515, 21.501, | 18.562, 12.542, 12.516, | 18.563 12.543 | Ecology I, II, III<br>Physical Chemistry I, II, III<br>or<br>Biochemistry I, II, III<br>Sociology I, II, III | 6<br>6<br>6<br>6 |
|                                 |                         |               | *Electives   | 6                |

**Seventh Year**

|  |                 |               |  |                  |
|--|-----------------|---------------|--|------------------|
|  | 18.557, 30.604, | 18.558 30.605 | Genetics I, II<br>Genetics Lab.<br>Introduction to Literary Form I, II<br>English Elective | 4<br>2<br>4<br>2 |
|  |                 |               | *Electives as needed to complete   |                  |
|  |                 |               | Total Credits  |                  |

**Total Credits****174**


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\*General Science Teacher Option—Students planning to apply to the Northeastern University Graduate School of Education must include courses in Adolescent Psychology and Principles of Teaching among the electives.

# law enforcement

**Timothy F. Moran**, Associate Dean  
Director, Law Enforcement Programs  
Telephone 437-3324

**Joseph N. Connors**, Assistant Dean  
Associate Director, Law Enforcement Programs  
Telephone 437-3325

## **Aims**

Law Enforcement programs of study are offered to meet the needs of present and potential practitioners in the fields of corrections, law enforcement, and security who wish to acquire a liberal education as well as a professional competence, or to gain recognition for development and attainment while pursuing a career in that profession.

## **Methods**

The distribution requirements, including certain required courses, are shown with each curriculum. Upon petition, students may be permitted under certain circumstances to substitute other courses which will more adequately serve their specific objectives.

To provide a balanced program which will achieve the established objectives, the faculty has set minimum requirements in the areas of study outlined on the following pages, with a recommended sequence of courses for each program.

## **Bachelor of Science Degree Program**

Major fields of study are offered in Correctional Practices, Law Enforcement, and Security. Students should choose their major field of study and their electives in consultation with a program adviser.

Each curriculum provides for not less than 174 quarter hours of work, including at least 60 quarter hours of advanced work in a major field.

No student transferring from another college or university is eligible to receive a degree until at least 46 quarter hours of academic work have been completed at Northeastern University immediately preceding graduation.

### **Associate in Science Degree Program**

The program leading to the associate degree is offered for those who wish to obtain a general background in correctional practices, law enforcement, or security, but do not wish to pursue a major field of concentration for the baccalaureate degree.

Candidates for the Associate in Science degree must complete a minimum of 96 quarter hours of credit. This is approximately one half of the requirements for the Bachelor of Science degree, and includes at least 40 quarter hours of work in a major field.

### **Honors Program**

\*The Honors Program in the field of law enforcement is designed to provide qualified students with the opportunity to achieve a broader and deeper intellectual academic experience within their chosen fields: corrections, law enforcement, or security.

In general, the Honors Program consists of the following areas: independent study, directed reading seminar, independent research projects, and special seminars.

The particular academic structure of a student's Honors Program will be arranged in consultation with the Program Director and the Honors Faculty Committee, to direct the student's program.

The Honors Program is open to all matriculated Law Enforcement Program students in University College, who have obtained an associate degree or equivalent, and a minimum cumulative grade point average of 3.0. Students who are eligible for this program may apply for admission and approval, to the Director of Law Enforcement Programs.

### **Advanced Standing Credit—Credit for Non-Collegiate Experience (NCE)**

A matriculated University College student with a department major in Corrections, Law Enforcement, or Security, may obtain up to 16 quarter hours of credit (excluding CLEP), by petitioning to take a comprehensive examination in the specific subject area based upon the student's knowledge acquired in a non-traditional manner. Petitions for these examinations may be obtained in 102 Churchill Hall or 200 Churchill Hall.

In no case will this credit be considered as partial fulfillment of the residence requirement nor will a letter grade be assigned.

No credit will be assigned in this manner for courses which can be accredited through the CLEP Testing Program at the time of the petition. Credit will only be assigned to specific courses. It is possible that this credit may be applicable toward a degree in University College only.

\*For course numbers see page 291

## Course Sequence

The course sequence as listed is merely a frame of reference, a suggested guide to assist students in arranging their program. Students who wish to add a fifth course each quarter to this sequence may do so without approval of the department.

## Intensive Courses

Many courses are frequently offered as single quarter intensives during the regular school year. Please refer to the listing of courses on page 301.

Intensive courses offer the opportunity for a student to achieve his objective in a shorter period of time, i.e., a student could reasonably earn a B.S. degree in five years, and an associate degree in three years.

## CORRECTIONAL PRACTICES

## Bachelor of Science Degree

### Basic Courses—required

|           |          |        |                                      | quarter hours |           |
|-----------|----------|--------|--------------------------------------|---------------|-----------|
| **10.327, | 10.328,  | 10.329 | Mathematics I, II, III               | 6             |           |
| 19.501,   | 19.502,  | 19.503 | Psychology I, II, III                | 6             |           |
| 23.501,   | 23.502,  | 23.503 | Western Civilization I, II, III      | 6             |           |
|           | *30.601, | 30.602 | Composition and Rhetoric I, II       | 4             |           |
|           | 30.604,  | 30.605 | Introduction to Literary Forms I, II | 4             |           |
| 39.501,   | 39.502,  | 39.503 | Econ. Princ. and Problems I, II, III | 6             | <b>32</b> |

### Core Courses—required

|         |         |        |  |   |           |
|---------|---------|--------|--|---|-----------|
|         | 19.524, | 19.525 | Social Psychology I, II                    | 4 |           |
| 19.541, | 19.542, | 19.543 | Abnormal Psychology I, II, III             | 6 |           |
| 21.501, | 21.502, | 21.503 | Sociology I, II, III                       | 6 |           |
|         |         | 21.534 | Social Control                             | 2 |           |
|         |         | 21.547 | Social Problems                            | 2 |           |
|         | 21.553, | 21.554 | Racial and Cultural Relations I, II        | 4 |           |
|         |         | 21.557 | Urban Sociology                            | 2 |           |
| 22.501, | 22.502, | 22.503 | Principles of Political Science I, II, III | 6 |           |
|         |         | 22.514 | American Constitutional Law                | 2 |           |
|         |         | 22.515 | Civil Rights                               | 2 |           |
|         | 22.516, | 22.517 | Public Administration I, II                | 4 |           |
| 23.504, | 23.505, | 23.506 | American History I, II, III                | 6 |           |
|         | 45.511, | 45.512 | Human Relations in Personnel I, II         | 4 | <b>50</b> |

\*For new English requirements see explanation on page 220.

\*\*94.601, 602, 603, L. E. Mathematics I, II, III may be taken in place of 10.327, 328, 329.



**Major Concentration Courses—required**

|                 |                |   |   |           |
|-----------------|----------------|---|---|-----------|
|                 | 94.505         | Human Rights in Corrections                         | 2 |           |
|                 | 94.506         | Basic Statistics in Law Enforcement                 | 2 |           |
|                 | 94.507         | Correctional Counseling                             | 2 |           |
| 94.517, 94.518, | 94.519         | Advanced Correctional Practices I, II, III          | 6 |           |
|                 | 94.523         | The Law and Institutional Treatment                 | 2 |           |
|                 | 94.524         | Comparative Correctional Systems                    | 2 |           |
| 94.525,         | 94.526         | Law Enforcement Identification<br>and Records I, II | 4 |           |
|                 | 94.532         | Research Methods in Criminal Justice                | 2 |           |
|                 | 94.544         | The American Correctional System                    | 2 |           |
| 94.546,         | 94.547         | Social Deviance I, II                               | 4 |           |
| 94.549,         | 94.550         | Treatment of Offenders I, II                        | 4 |           |
| 94.551,         | 94.552, 94.553 | Correctional Administration I, II, III              | 6 |           |
| 94.563,         | 94.564         | Criminology I, II                                   | 4 |           |
|                 | 94.565         | Delinquency Prevention                              | 2 |           |
| 94.567,         | 94.568         | Probation and Parole Practices I, II                | 4 |           |
| 94.574,         | 94.575         | Juvenile Corrections I, II                          | 4 |           |
|                 | 94.593         | Seminar in Correctional Practices                   | 2 |           |
| 94.627,         | 94.628         | Administration of Justice I, II                     | 4 |           |
| 94.631,         | 94.632         | Criminal Law I, II                                  | 4 |           |
| 94.633,         | 94.634         | Evidence and Court Procedure I, II                  | 4 | <b>66</b> |

**Electives\*****26****Total Credits****174**

\*For suggested electives and additional department offerings, see page 128. While students may elect courses in their major field in excess of the minimum number required, they are encouraged to elect courses from any other curricula in the University College Catalog.

**CORRECTIONAL PRACTICES****Recommended Course Sequence for the 7-year Program  
Leading to the Bachelor of Science Degree**

All new students should discuss their program with a program adviser before attempting to undertake the following sequence of courses:

|                 | <b>Quarter 1</b>   | <b>Quarter 2</b>  | <b>Quarter 3</b>  |
|-----------------|--|---|---|
| <b>1st Year</b> | 30.601<br>*Comp. & Rhet. I<br>94.627<br>Admin. of Justice I<br>94.631<br>Criminal Law I<br>94.633<br>Evid. & Ct. Proc. I | 30.602<br>Comp. & Rhet. II<br>94.628<br>Admin. of Justice II<br>94.632<br>Criminal Law II<br>94.634<br>Evid. & Ct. Proc. II | 94.505<br>Human Rts. in Corr.<br>94.544<br>Amer. Corr. System<br>94.523<br>Law & Inst. Treat.<br>Elective                         |
| <b>2nd Year</b> | 19.501<br>Psychology I<br>94.546<br>Soc. Deviance I<br>94.567<br>Prob. & Par. Prac. I<br>94.574<br>Juvenile Corr. I      | 19.502<br>Psychology II<br>94.547<br>Soc. Deviance II<br>94.568<br>Prob. & Par. Prac. II<br>94.575<br>Juvenile Corr. II     | 19.503<br>Psychology III<br>Elective<br>Elective<br>94.507<br>Corr. Counseling  |
| <b>3rd Year</b> | 21.501<br>Sociology I<br>94.549<br>Treat. Offenders I<br>19.541<br>Abnorm. Psych. I<br>22.514<br>Amer. Const. Law        | 21.502<br>Sociology II<br>94.550<br>Treat. Offenders II<br>19.542<br>Abnorm. Psych. II<br>22.515<br>Civil Rights            | 21.503<br>Sociology III<br>94.506<br>Basic Stats. in L. E.<br>19.543<br>Abnorm. Psych. III<br>94.532<br>Res. Meth. Crim.<br>Just. |
| <b>4th Year</b> | 94.563<br>Criminology I<br>21.553<br>Rac. & Cul. Rel. I<br>94.551<br>Corr. Admin. I<br>23.504<br>Amer. Hist. I           | 94.564<br>Criminology II<br>21.554<br>Rac. & Cul. Rel. II<br>94.552<br>Corr. Admin. II<br>23.505<br>Amer. Hist. II          | 94.565<br>Del. Prevention<br>21.557<br>Urban Sociology<br>94.553<br>Corr. Admin. III<br>23.506<br>Amer. Hist. III                 |

\*For new English requirements see explanation on page 220.

|                     |                           |                            |                        |
|---------------------|---------------------------|----------------------------|------------------------|
| <b>5th<br/>Year</b> | 30.604                    | 30.605                     |                        |
|                     | Intro. to Lit.<br>Forms I | Intro. to Lit.<br>Forms II | Elective               |
|                     | 94.525                    | 94.526                     |                        |
|                     | Law Enf. Id. &<br>Rec. I  | Law Enf. Id. &<br>Rec. II  | Elective               |
|                     | 22.501                    | 22.502                     | 22.503                 |
|                     | Prin. Polit. Sci. I       | Prin. Polit. Sci. II       | Prin. Polit. Sci. III  |
|                     | 45.511                    | 45.512                     |                        |
|                     | Hum. Rel. in<br>Pers. I   | Hum. Rel. in<br>Pers. II   | Elective               |
| <b>6th<br/>Year</b> | 94.517                    | 94.518                     | 94.519                 |
|                     | Adv. Corr. Prac. I        | Adv. Corr. Prac. II        | Adv. Corr. Prac. III   |
|                     | 39.501                    | 39.502                     | 39.503                 |
|                     | Ec. Prin. & Prob. I       | Ec. Prin. & Prob. II       | Ec. Prin. & Prob. III  |
|                     | 23.501                    | 23.502                     | 23.503                 |
|                     | Western Civ. I            | Western Civ. II            | Western Civ. III       |
|                     | 19.524                    | 19.525                     |                        |
|                     | Soc. Psych. I             | Soc. Psych. II             | Elective               |
| <b>7th<br/>Year</b> | 10.327                    | 10.328                     | 10.329                 |
|                     | Mathematics I             | Mathematics II             | Mathematics III        |
|                     | 22.516                    | 22.517                     | 94.524                 |
|                     | Public Admin. I           | Public Admin. II           | Comp. Corr.<br>Systems |
|                     | 21.534                    | 21.547                     | Elective               |
|                     | Social Control            | Social Problems            | Elective               |
|                     | 94.593                    | Elective                   | Elective               |
|                     | Sem. Corr. Pract.         | Elective                   | Elective               |

**CORRECTIONAL PRACTICES****Associate in Science Degree****Basic Courses—required**

quarter hours

|           |         |        |                                |   |    |
|-----------|---------|--------|--------------------------------|---|----|
| 19.501,   | 19.502, | 19.503 | Psychology I, II, III          | 6 |    |
| **30.601, | 30.602  |        | Composition and Rhetoric I, II | 4 | 10 |

**Core Courses—required**

|         |         |        |                                     |   |    |
|---------|---------|--------|-------------------------------------|---|----|
| 19.541, | 19.542, | 19.543 | Abnormal Psychology I, II, III      | 6 |    |
| 21.501, | 21.502, | 21.503 | Sociology I, II, III                | 6 |    |
|         | 21.553, | 21.554 | Racial and Cultural Relations I, II | 4 |    |
|         |         | 21.557 | Urban Sociology                     | 2 |    |
|         |         | 22.514 | American Constitutional Law         | 2 |    |
|         |         | 22.515 | Civil Rights                        | 2 | 22 |

**Major Concentration Courses—required**

|         |         |        |  |   |    |
|---------|---------|--------|--|---|----|
|         |         | 94.505 | Human Rights in Corrections            | 2 |    |
|         |         | 94.506 | Basic Statistics in Law Enforcement    | 2 |    |
|         |         | 94.507 | Correctional Counseling                | 2 |    |
|         |         | 94.523 | The Law and Institutional Treatment    | 2 |    |
|         |         | 94.532 | Research Methods in Criminal Justice   | 2 |    |
|         |         | 94.544 | The American Correctional System       | 2 |    |
|         | 94.546, | 94.547 | Social Deviance I, II                  | 4 |    |
|         | 94.549, | 94.550 | Treatment of Offenders I, II           | 4 |    |
| 94.551, | 94.552, | 94.553 | Correctional Administration I, II, III | 6 |    |
|         | 94.563, | 94.564 | Criminology I, II                      | 4 |    |
|         |         | 94.565 | Delinquency Prevention                 | 2 |    |
|         | 94.567, | 94.568 | Probation and Parole Practices I, II   | 4 |    |
|         | 94.574, | 94.575 | Juvenile Corrections I, II             | 4 |    |
|         | 94.627, | 94.628 | Administration of Justice I, II        | 4 |    |
|         | 94.631, | 94.632 | Criminal Law I, II                     | 4 |    |
|         | 94.633, | 94.634 | Evidence and Court Procedure I, II     | 4 | 52 |

**Electives\***

12

**Total Credits**

96

\*While students may elect courses in their major field in excess of the minimum number required, they are encouraged to elect courses from any other curricula in the University College Catalog. For suggested electives and additional offerings see page 128.

\*\*For new English requirements see explanation on page 220.

**CORRECTIONAL PRACTICES****Recommended Course Sequence for the 4-Year Program  
Leading to the Associate in Science Degree**

All new students should discuss their program with an adviser before undertaking the following sequence of courses:

|                 | <b>Quarter 1</b>  | <b>Quarter 2</b>  | <b>Quarter 3</b>  |
|-----------------|---|---|---|
| <b>1st Year</b> | 30.601<br>Comp. & Rhet. I<br>94.627<br>Admin. of Justice I<br>94.631<br>Criminal Law I<br>94.633<br>Evid. & Ct. Proc. I | 30.602<br>Comp. & Rhet. II<br>94.628<br>Admin. of Justice II<br>94.632<br>Criminal Law II<br>94.634<br>Evid. & Ct. Proc. II | 94.505<br>Human Rts. in Corr.<br>94.544<br>Amer. Corr. Sys.<br>94.523<br>Law & Inst. Treat.<br>Elective                           |
| <b>2nd Year</b> | 19.501<br>Psychology I<br>94.546<br>Soc. Deviance I<br>94.567<br>Prob. & Par. Prac. I<br>94.574<br>Juvenile Corr. I     | 19.502<br>Psychology II<br>94.547<br>Soc. Deviance II<br>94.568<br>Prob. & Par. Prac. II<br>94.575<br>Juvenile Corr. II     | 19.503<br>Psychology III<br>Elective<br>Elective<br>94.507<br>Corr. Counseling  |
| <b>3rd Year</b> | 21.501<br>Sociology I<br>94.549<br>Treat. Offenders I<br>19.541<br>Abnorm. Psych. I<br>22.514<br>Amer. Const. Law       | 21.502<br>Sociology II<br>94.550<br>Treat. Offenders II<br>19.542<br>Abnorm. Psych. II<br>22.515<br>Civil Rights            | 21.503<br>Sociology III<br>94.506<br>Basic Stats. in L. E.<br>19.543<br>Abnorm. Psych. III<br>94.532<br>Res. Meth. Crim.<br>Just. |
| <b>4th Year</b> | 94.563<br>Criminology I<br>21.553<br>Rac. & Cul. Rel. I<br>94.551<br>Corr. Admin. I<br>Elective                         | 94.564<br>Criminology II<br>21.554<br>Rac. & Cul. Rel. II<br>94.552<br>Corr. Admin. II<br>Elective                          | 94.565<br>Del. Prevention<br>21.557<br>Urban Sociology<br>94.553<br>Corr. Admin. III<br>Elective                                  |

**LAW ENFORCEMENT****Bachelor of Science Degree****Basic Courses—required****quarter hours**

|           |          |        |  |   |           |
|-----------|----------|--------|--|---|-----------|
| **10.327, | 10.328,  | 10.329 | Mathematics I, II, III                         | 6 |           |
| 19.501,   | 19.502,  | 19.503 | Psychology I, II, III                          | 6 |           |
| 23.501,   | 23.502,  | 23.503 | Western Civilization I, II, III                | 6 |           |
|           | *30.601, | 30.602 | Composition and Rhetoric I, II                 | 4 |           |
|           | 30.604,  | 30.605 | Introduction to Literary Forms I, II           | 4 |           |
| 39.501,   | 39.502,  | 39.503 | Economic Principles and<br>Problems I, II, III | 6 | <b>32</b> |

**Core Courses—required**

|         |         |        |  |   |           |
|---------|---------|--------|--|---|-----------|
|         | 19.524, | 19.525 | Social Psychology I, II                    | 4 |           |
| 19.541, | 19.542, | 19.543 | Abnormal Psychology I, II, III             | 6 |           |
| 21.501, | 21.502, | 21.503 | Sociology I, II, III                       | 6 |           |
|         |         | 21.534 | Social Control                             | 2 |           |
|         |         | 21.547 | Social Problems                            | 2 |           |
| 22.501, | 22.502, | 22.503 | Principles of Political Science I, II, III | 6 |           |
|         |         | 22.514 | American Constitutional Law                | 2 |           |
|         |         | 22.515 | Civil Rights                               | 2 |           |
|         | 22.516, | 22.517 | Public Administration I, II                | 4 |           |
| 23.504, | 23.505, | 23.506 | American History I, II, III                | 6 |           |
| 29.501, | 29.502, | 29.503 | Effective Speaking I, II, III              | 6 | <b>46</b> |

\*For new English requirements see explanation on page 220.

\*\*94.601, 602, 603, L. E. Mathematics I, II, III, may be taken in place of 10.327, 10.328, 10.329.

| Major Concentration Courses—required |        |   | quarter hours |
|--------------------------------------|--------|---|---------------|
|                                      | 94.506 | Basic Statistics in Law Enforcement               | 2             |
| 94.508,                              | 94.509 | Criminal Investigation and Case Preparation I, II | 4             |
|                                      | 94.512 | Comparative Police Systems                        | 2             |
| 94.514,                              | 94.515 | Interviews and Interrogations I, II               | 4             |
| 94.520,                              | 94.521 | Traffic Safety & Control I, II                    | 4             |
| 94.525,                              | 94.526 | Law Enforcement Identification and Records I, II  | 4             |
|                                      | 94.530 | Police Public Relations                           | 2             |
|                                      | 94.531 | Police Community Relations                        | 2             |
|                                      | 94.532 | Research Methods in Criminal Justice              | 2             |
| 94.536,                              | 94.537 | The Patrol Function I, II                         | 4             |
| 94.541,                              | 94.542 | Introduction to Criminalistics I, II              | 4             |
| 94.546,                              | 94.547 | Social Deviance I, II                             | 4             |
|                                      | 94.557 | Investigative Report Writing                      | 2             |
|                                      | 94.560 | Police Supervision                                | 2             |
|                                      | 94.561 | Police Work with Juveniles                        | 2             |
| 94.563,                              | 94.564 | Criminology I, II                                 | 4             |
|                                      | 94.565 | Delinquency Prevention                            | 2             |
| 94.571,                              | 94.572 | Law Enforcement Management and Planning I, II     | 4             |
| 94.621,                              | 94.622 | Civil Liberties and the Police I, II              | 4             |
| 94.627,                              | 94.628 | Administration of Justice I, II                   | 4             |
| 94.629,                              | 94.630 | Civil Law in Criminal Justice I, II               | 4             |
| 94.631,                              | 94.632 | Criminal Law I, II                                | 4             |
| 94.633,                              | 94.634 | Evidence and Court Procedure I, II                | 4             |
|                                      |        |   | <b>74</b>     |
| <b>Electives*</b>                    |        |   | <b>22</b>     |
| <b>Total Credits</b>                 |        |   | <b>174</b>    |

\*While students may elect courses in their major field in excess of the minimum number required, they are encouraged to elect courses from any other curricula in the University College Catalog. For suggested electives and additional department offerings, see page 128.

**LAW ENFORCEMENT****Recommended Course Sequence for the 7-Year Program  
Leading to the Bachelor of Science Degree**

All new students should discuss their program with an adviser before undertaking the following sequence of courses:

|                 | <b>Quarter 1</b>   | <b>Quarter 2</b>   | <b>Quarter 3</b>  |
|-----------------|--|--|---|
| <b>1st Year</b> | 30.601<br>Comp. & Rhet. I<br>94.627<br>Admin. of Justice I<br>94.631<br>Criminal Law I<br>94.633<br>Evid. & Ct. Proc. I            | 30.602<br>Comp. & Rhet. II<br>94.628<br>Admin. of Justice II<br>94.632<br>Criminal Law II<br>94.634<br>Evid. & Ct. Proc. II            | Elective<br>94.530<br>Polic Public Rel.<br>22.514<br>Const. Law<br>22.515<br>Civil Rights   |
| <b>2nd Year</b> | 21.501<br>Sociology I<br>94.536<br>Patrol Funct. I<br>94.541<br>Int. Criminalist. I<br>94.514<br>Interv. & Interr. I               | 21.502<br>Sociology II<br>94.537<br>Patrol Funct. II<br>94.542<br>Int. Criminalist. II<br>94.515<br>Interv. & Interr. II               | 21.503<br>Sociology III<br>94.560<br>Police Supervision<br>Elective   |
| <b>3rd Year</b> | 19.501<br>Psychology I<br>94.546<br>Social Deviance I<br>94.508<br>Cr. Inv. Case<br>Prep. I<br>94.629<br>Civ. Law Crim.<br>Just. I | 19.502<br>Psychology II<br>94.547<br>Social Deviance II<br>94.509<br>Cr. Inv. Case<br>Prep. II<br>94.630<br>Civ. Law Crim.<br>Just. II | 19.503<br>Psychology III<br>21.547<br>Social Problems<br>94.557<br>Inv. Report Writing<br><br>94.532<br>Res. Meth.<br>Crim. Just. |
| <b>4th Year</b> | 94.563<br>Criminology I<br>19.541<br>Abnorm. Psych. I<br>94.520<br>Traf. Sfty. & Cont. I<br>94.621<br>Civ. Lib. & Police I         | 94.564<br>Criminology II<br>19.542<br>Abnorm. Psych. II<br>94.521<br>Traf. Sfty. & Cont. II<br>94.622<br>Civ. Lib. & Police II         | 94.565<br>Del. Prevention<br>19.543<br>Abnorm. Psych. III<br>94.512<br>Comp. Pol. Systems<br>94.561<br>Pol. Work w/Juv.           |



|                     |                                     |                                      |                                      |
|---------------------|-------------------------------------|--------------------------------------|--------------------------------------|
| <b>5th<br/>Year</b> | 29.501<br>Effec. Spkg. I            | 29.502<br>Effec. Spkg. II            | 29.503<br>Effec. Spkg. III           |
|                     | 23.504<br>Amer. History I           | 23.505<br>Amer. History II           | 23.506<br>Amer. History III          |
|                     | 94.571<br>Law Enf. Mgt.<br>& Pl. I  | 94.572<br>Law Enf. Mgt.<br>& Pl. II  | 94.506<br>Basic Stat. in<br>Law Enf. |
|                     | 30.604<br>Intro. to Lit.<br>Forms I | 30.605<br>Intro. to Lit.<br>Forms II | 94.531<br>Police Comm. Rel.          |
|                     |                                     |                                      |                                      |
| <b>6th<br/>Year</b> | 10.327<br>Mathematics I             | 10.328<br>Mathematics II             | 10.329<br>Mathematics III            |
|                     | 22.501<br>Prin. Polit. Sci. I       | 22.502<br>Prin. Polit. Sci. II       | 22.503<br>Prin. Polit. Sci. III      |
|                     | 94.525<br>Law Enf. Id. &<br>Rec. I  | 94.526<br>Law Enf. Id. &<br>Rec. II  | Elective                             |
|                     | 19.524<br>Soc. Psych. I             | 19.525<br>Soc. Psych. II             | 21.534<br>Social Control             |
|                     |                                     |                                      |                                      |
| <b>7th<br/>Year</b> | 39.501<br>Ec. Prin. & Prob. I       | 39.502<br>Ec. Prin. & Prob. II       | 39.503<br>Ec. Prin. & Prob. III      |
|                     | 23.501<br>Western Civ. I            | 23.502<br>Western Civ. II            | 23.503<br>Western Civ. III           |
|                     | Elective                            | Elective                             | Elective                             |
|                     | 22.516<br>Public Admin. I           | 22.517<br>Public Admin. II           | Elective                             |
|                     |                                     |                                      |                                      |

**LAW ENFORCEMENT****Associate in Science Degree****Basic Courses—required**

|           |         |        | quarter hours                  |          |
|-----------|---------|--------|--------------------------------|----------|
| 19.501,   | 19.502, | 19.503 | Psychology I, II, III          | 6        |
| **30.601, | 30.602  |        | Composition and Rhetoric I, II | 4        |
|           |         |        |                                | <hr/> 10 |

**Core Courses—required**

|         |         |        |                                |       |    |
|---------|---------|--------|--------------------------------|-------|----|
| 19.541, | 19.542, | 19.543 | Abnormal Psychology I, II, III | 6     |    |
| 21.501, | 21.502, | 21.503 | Sociology I, II, III           | 6     |    |
|         |         | 22.514 | American Constitutional Law    | 2     |    |
|         |         | 22.515 | Civil Rights                   | 2     | 16 |
|         |         |        |                                | <hr/> |    |

**Major Concentration Courses—required**

|         |        |  |   |    |
|---------|--------|--|---|----|
| 94.508, | 94.509 | Criminal Investigation and<br>Case Preparation I, II | 4 |    |
| 94.514, | 94.515 | Interviews and Interrogations I, II                  | 4 |    |
| 94.520, | 94.521 | Traffic Safety & Control I, II                       | 4 |    |
|         | 94.530 | Police Public Relations                              | 2 |    |
|         | 94.531 | Police Community Relations                           | 2 |    |
|         | 94.532 | Research Methods in Criminal Justice                 | 2 |    |
| 94.536, | 94.537 | The Patrol Function I, II                            | 4 |    |
| 94.541, | 94.542 | Introduction to Criminalistics I, II                 | 4 |    |
| 94.546, | 94.547 | Social Deviance I, II                                | 4 |    |
|         | 94.557 | Investigative Report Writing                         | 2 |    |
|         | 94.560 | Police Supervision                                   | 2 |    |
|         | 94.561 | Police Work with Juveniles                           | 2 |    |
| 94.563, | 94.564 | Criminology I, II                                    | 4 |    |
|         | 94.565 | Delinquency Prevention                               | 2 |    |
| 94.627, | 94.628 | Administration of Justice I, II                      | 4 |    |
| 94.629, | 94.630 | Civil Law in Criminal Justice I, II                  | 4 |    |
| 94.631, | 94.632 | Criminal Law I, II                                   | 4 |    |
| 94.633, | 94.634 | Evidence and Court Procedure I, II                   | 4 | 58 |

**Electives\*****12****Total Credits****96**

\*While students may elect courses in their major field in excess of the minimum number required, they are encouraged to elect courses from any other curricula in the University College Catalog. For suggested electives and additional department offerings, see page 128.

\*\*For new English requirements see explanation on page 220.

**LAW ENFORCEMENT****Recommended Course Sequence for the 4-Year Program  
Leading to the Associate in Science Degree**

All new students should discuss their program with their program adviser before undertaking the following sequence of courses.

|                 | <b>Quarter 1</b>   | <b>Quarter 2</b>   | <b>Quarter 3</b>   |
|-----------------|--|--|--|
| <b>1st Year</b> | 30.601<br>Comp. & Rhet. I<br>94.627<br>Admin. of Justice I<br>94.631<br>Criminal Law I<br>94.633<br>Evid. & Ct. Proc. I              | 30.602<br>Comp. & Rhet. II<br>94.628<br>Admin. of Justice II<br>94.632<br>Criminal Law II<br>94.634<br>Evid. & Ct. Proc. II              | Elective<br>94.530<br>Police Public Rel.<br>22.514<br>Const. Law<br>22.515<br>Civil Rights   |
| <b>2nd Year</b> | 21.501<br>Sociology I<br>94.536<br>Patrol Funct. I<br>94.541<br>Int. Criminalist. I<br>94.514<br>Interv. & Interr. I                 | 21.502<br>Sociology II<br>94.537<br>Patrol Funct. II<br>94.542<br>Int. Criminalist. II<br>94.515<br>Interv. & Interr. II                 | 21.503<br>Sociology III<br>94.560<br>Police Supervision<br><br>Elective<br><br>Elective  |
| <b>3rd Year</b> | 19.501<br>Psychology I<br>94.546<br>Social Deviance I<br>94.508<br>Cr. Inv. & Case<br>Prep. I<br>94.629<br>Civ. Law Crim.<br>Just. I | 19.502<br>Psychology II<br>94.547<br>Social Deviance II<br>94.509<br>Cr. Inv. & Case<br>Prep. II<br>94.630<br>Civ. Law Crim.<br>Just. II | 19.503<br>Psychology III<br>94.561<br>Pol. Work w/Juv.<br>94.557<br>Inv. Report Writing<br><br>94.532<br>Res. Meth.<br>Crim. Just. |
| <b>4th Year</b> | 94.563<br>Criminology I<br>19.541<br>Abnorm. Psych. I<br>94.520<br>Traf. Sfty. & Cont. I<br>Elective                                 | 94.564<br>Criminology II<br>19.542<br>Abnorm. Psych. II<br>94.521<br>Traf. Sfty. & Cont. II<br>Elective                                  | 94.565<br>Del. Prevention<br>19.543<br>Abnorm. Psych. III<br>94.531<br>Police Comm. Rel.<br>Elective                               |

**SECURITY****Bachelor of Science Degree****Basic Courses—required****quarter hours**

|           |          |        |  |   |           |
|-----------|----------|--------|--|---|-----------|
| **10.327, | 10.328,  | 10.329 | Mathematics I, II, III                         | 6 |           |
| 19.501,   | 19.502,  | 19.503 | Psychology I, II, III                          | 6 |           |
| 23.501,   | 23.502,  | 23.503 | Western Civilization I, II, III                | 6 |           |
|           | *30.601, | 30.602 | Composition and Rhetoric I, II                 | 4 |           |
|           | 30.604,  | 30.605 | Introduction to Literary Forms I, II           | 4 |           |
| 39.501,   | 39.502,  | 39.503 | Economic Principles and<br>Problems I, II, III | 6 | <b>32</b> |

**Core Courses—required**

|         |         |        |  |   |           |
|---------|---------|--------|--|---|-----------|
| 19.532, | 19.533, | 19.534 | Industrial Psychology I, II, III   | 6 |           |
| 21.501, | 21.502, | 21.503 | Sociology I, II, III   | 6 |           |
|         |         | 22.514 | American Constitutional Law  | 2 |           |
|         |         | 22.515 | Civil Rights   | 2 |           |
|         | 22.516, | 22.517 | Public Administration I, II  | 4 |           |
| 41.501, | 41.502, | 41.503 | Accounting Principles I, II, III   | 6 |           |
| 44.501, | 44.502, | 44.503 | Principles of Finance,<br>Principles of Investments,<br>Principles of Insurance<br>and Risk Management | 6 |           |
| 44.514, | 44.515, | 44.516 | Property and Casualty Insurance I, II, III   | 6 |           |
|         | 45.610, | 45.611 | Labor Management Relations   | 4 |           |
| 45.570, | 45.571, | 45.572 | Electronic Data Processing I, II, III  | 6 |           |
|         |         | 45.620 | Industrial Safety  | 2 | <b>50</b> |

\*For new English requirements see explanation on page 220.

\*\*94.601, 94.602, 94.603, L. E. Math I, II, III, may be taken in place of 10.327, 10.328, 10.329.

**Major Concentration Courses—required**

|         |         |   |   |           |
|---------|---------|---|---|-----------|
| 94.508, | 94.509  | Criminal Investigation and Case Preparation I, II | 4 |           |
|         | 94.513  | Introduction to Industrial Security               | 2 |           |
| 94.514, | 94.515  | Interviews and Interrogations I, II               | 4 |           |
|         | 94.516  | Security Administration                           | 2 |           |
| 94.525, | 94.526  | Law Enforcement Identification and Records I, II  | 4 |           |
| 94.536, | 94.537  | The Patrol Function I, II                         | 4 |           |
| 94.541, | 94.542  | Introduction to Criminalistics I, II              | 4 |           |
|         | 94.557  | Investigative Report Writing                      | 2 |           |
| 94.563, | 94.564  | Criminology I, II                                 | 4 |           |
|         | 94.565  | Delinquency Prevention                            | 2 |           |
| 94.571, | 94.572  | Law Enforcement Management and Planning I, II     | 4 |           |
| 94.577, | 94.578, | 94.579 Government Security Programs I, II, III    | 6 |           |
|         |         | 94.582 Document Control                           | 2 |           |
|         |         | 94.583 Industrial Fire Prevention                 | 2 |           |
| 94.584, | 94.585  | Physical Security I, II                           | 4 |           |
|         | 94.586  | Retail Security                                   | 2 |           |
|         | 94.587  | Bank Security Measures                            | 2 |           |
|         | 94.591  | Seminar in Security                               | 2 |           |
| 94.627, | 94.628  | Administration of Justice I, II                   | 4 |           |
| 94.629, | 94.630  | Civil Law in Criminal Justice I, II               | 4 |           |
| 94.631, | 94.632  | Criminal Law I, II                                | 4 |           |
| 94.633, | 94.634  | Evidence and Court Procedure I, II                | 4 | <b>72</b> |

**Electives\*****20**

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**174**

\*While students may elect courses in their major field in excess of the minimum number required, they are encouraged to elect courses from any other curricula in the University College Catalog. For suggested electives and additional department offerings, see page 128.

**SECURITY****Recommended Course Sequence for the 7-year Program  
Leading to the Bachelor of Science Degree**

All new students should discuss their program with their program adviser before undertaking the following sequence of courses:

|                 | <b>Quarter 1</b>   | <b>Quarter 2</b>   | <b>Quarter 3</b>  |
|-----------------|--|--|---|
| <b>1st Year</b> | 30.601<br>Comp. & Rhet. I<br>94.627<br>Admin. of Justice I<br>94.631<br>Criminal Law I<br>94.633<br>Evid. & Ct. Proc. I                  | 30.602<br>Comp. & Rhet. III<br>94.628<br>Admin. of Justice II<br>94.632<br>Criminal Law II<br>94.634<br>Evid. & Ct. Proc. II                 | 94.513<br>Introd. Indust. Sec.<br>94.586<br>Retail Security<br><br>Elective<br><br>Elective                       |
| <b>2nd Year</b> | 94.514<br>Interv. & Interr. I<br>19.501<br>Psychology I<br>94.536<br>Patrol Funct. I<br>94.584<br>Phys. Security I                       | 94.515<br>Interv. & Interr. II<br>19.502<br>Psychology II<br>94.537<br>Patrol Funct. II<br>94.585<br>Phys. Security II                       | Elective<br>19.503<br>Psychology III<br>94.583<br>Indust. Fire Prev.<br>94.516<br>Security Admin.                 |
| <b>3rd Year</b> | 21.501<br>Sociology I<br>94.508<br>Cr. Inv. & Case<br>Prep. I<br>19.532<br>Int. Indust. Psy. I<br>94.629<br>Civ. Law in Crim.<br>Just. I | 21.502<br>Sociology II<br>94.509<br>Cr. Inv. & Case<br>Prep. II<br>19.533<br>Int. Indust. Psy. II<br>94.630<br>Civ. Law in Crim.<br>Just. II | 21.503<br>Sociology III<br>94.557<br>Invest. Report<br>Writing<br>19.534<br>Int. Indust. Psy. III<br><br>Elective |
| <b>4th Year</b> | 94.563<br>Criminology I<br>45.570<br>Elec. Data Proc. I<br>94.577<br>Gov. Sec. Prog. I<br>22.514<br>Amer. Const. Law                     | 94.564<br>Criminology II<br>45.571<br>Elec. Data Proc. II<br>94.578<br>Gov. Sec. Prog. II<br>22.515<br>Civil Rights                          | 94.565<br>Del. Prevention<br>45.572<br>Elec. Data Proc. III<br>94.579<br>Gov. Sec. Prog. III<br><br>Elective      |

|                     |                            |                             |                               |
|---------------------|----------------------------|-----------------------------|-------------------------------|
| <b>5th<br/>Year</b> | 30.604                     | 30.605                      |                               |
|                     | Intro. to Lit.<br>Forms I  | Intro. to Lit.<br>Forms II  | Elective                      |
|                     | 23.501                     | 23.502                      | 23.503                        |
|                     | Western Civ. I             | Western Civ. II             | Western Civ. III              |
|                     | 94.541                     | 94.542                      | 94.582                        |
|                     | Int. Criminalist. I        | Int. Criminalist. II        | Document Control              |
|                     | 94.571                     | 94.572                      |                               |
|                     | Law Enf. Mgt.<br>& Plan. I | Law Enf. Mgt.<br>& Plan. II | Elective                      |
| <b>6th<br/>Year</b> | 39.501                     | 39.502                      | 39.503                        |
|                     | Ec. Prin. & Prob. I        | Ec. Prin. & Prob. II        | Ec. Prin. & Prob. III         |
|                     | 41.501                     | 41.502                      | 41.503                        |
|                     | Acctg. Prin. I             | Acctg. Prin. II             | Acctg. Prin. III              |
|                     | 45.610                     | 45.611                      |                               |
|                     | Labor Mgt. Rel. I          | Labor Mgt. Rel. II          |                               |
|                     | 94.525                     | 94.526                      |                               |
|                     | Law. Enf. Id.<br>& Rec. I  | Law Enf. Id.<br>& Rec. II   | Elective                      |
|                     | 44.501                     | 44.502                      | 44.503                        |
|                     | Prin. of Finance           | Prin. of Invest.            | Prin. of Ins.<br>& Risk Mgmt. |
| <b>7th<br/>Year</b> | 10.327                     | 10.328                      | 10.329                        |
|                     | Mathematics I              | Mathematics II              | Mathematics III               |
|                     | 44.514                     | 44.515                      | 44.516                        |
|                     | Prop. & Cas. Ins. I        | Prop. & Cas. Ins. II        | Prop. & Cas. Ins. III         |
|                     | 94.587                     | 45.620                      | 94.591                        |
|                     | Bank Sec. Meas.            | Indust. Safety I            | Sem. In Security              |
|                     | 22.516                     | 22.517                      |                               |
|                     | Public Admin. I            | Public Admin. II            | Elective                      |

**SECURITY****Associate in Science Degree**

quarter hours

**Basic Courses—required**

|           |         |        |                                |   |    |
|-----------|---------|--------|--------------------------------|---|----|
| 19.501,   | 19.502, | 19.503 | Psychology I, II, III          | 6 |    |
| **30.601, | 30.602  |        | Composition and Rhetoric I, II | 4 | 10 |

**Core Courses—required**

|         |         |        |                                       |   |    |
|---------|---------|--------|---------------------------------------|---|----|
| 19.532, | 19.533, | 19.534 | Industrial Psychology I, II, III      | 6 |    |
| 21.501, | 21.502, | 21.503 | Sociology I, II, III                  | 6 |    |
|         |         | 22.514 | American Constitutional Law           | 2 |    |
|         |         | 22.515 | Civil Rights                          | 2 |    |
| 45.570, | 45.571, | 45.572 | Electronic Data Processing I, II, III | 6 | 22 |

**Major Concentration Courses—required**

|         |         |   |   |    |
|---------|---------|---|---|----|
| 94.508, | 94.509  | Criminal Investigation and Case Preparation I, II | 4                                       |    |
|         | 94.513  | Introduction to Industrial Security               | 2                                       |    |
| 94.514, | 94.515  | Interviews and Interrogations I, II               | 4                                       |    |
|         | 94.516  | Security Administration                           | 2                                       |    |
| 94.536, | 94.537  | The Patrol Function I, II                         | 4                                       |    |
|         | 94.557  | Investigative Report Writing                      | 2                                       |    |
| 94.563, | 94.564  | Criminology I, II                                 | 4                                       |    |
|         | 94.565  | Delinquency Prevention                            | 2                                       |    |
| 94.577, | 94.578, | 94.579  | Government Security Programs I, II, III | 6  |
|         |         | 94.583  | Industrial Fire Prevention              | 2  |
| 94.584, | 94.585  | Physical Security I, II                           | 4                                       |    |
|         | 94.586  | Retail Security                                   | 2                                       |    |
| 94.627, | 94.628  | Administration of Justice I, II                   | 4                                       |    |
| 94.629, | 94.630  | Civil Law in Criminal Justice I, II               | 4                                       |    |
| 94.631, | 94.632  | Criminal Law I, II                                | 4                                       |    |
| 94.633, | 94.634  | Evidence and Court Procedure I, II                | 4                                       | 54 |

**Electives\***

10

**Total Credits**

96

\*While students may elect courses in their major field in excess of the minimum number required, they are encouraged to elect courses from any other curricula in the University College Catalog. For suggested electives and additional department offerings, see page 128.

\*\*For new English requirements see explanation on page 220.



**SECURITY****Recommended Course Sequence for the 4-Year Program  
Leading to the Associate in Science Degree**

All new students should discuss their programs with an adviser before undertaking the following sequence of courses:

|                 | <b>Quarter 1</b>   | <b>Quarter 2</b>   | <b>Quarter 3</b>  |
|-----------------|--|--|---|
| <b>1st Year</b> | 30.601<br>Comp. & Rhet. I<br>94.627<br>Admin. of Justice I<br>94.631<br>Criminal Law I<br>94.633<br>Evid. & Ct. Proc. I                  | 30.602<br>Comp. & Rhet. II<br>94.628<br>Admin. of Justice II<br>94.632<br>Criminal Law II<br>94.634<br>Evid. & Ct. Proc. II                  | 94.513<br>Intro. Indust. Sec.<br>94.586<br>Retail Security<br><br>Elective<br><br>Elective                        |
| <b>2nd Year</b> | 94.514<br>Interv. & Interr. I<br>19.501<br>Psychology I<br>94.536<br>Patrol Funct. I<br>94.584<br>Phys. Security I                       | 94.515<br>Interv. & Interr. II<br>19.502<br>Psychology II<br>94.537<br>Patrol Funct. II<br>94.585<br>Phys. Security II                       | Elective<br>19.503<br>Psychology III<br>94.583<br>Indust. Fire Prev.<br>94.516<br>Security Admin.                 |
| <b>3rd Year</b> | 21.501<br>Sociology I<br>94.508<br>Cr. Inv. & Case<br>Prep. I<br>19.532<br>Int. Indust. Psy. I<br>94.629<br>Civ. Law in Crim.<br>Just. I | 21.502<br>Sociology II<br>94.509<br>Cr. Inv. & Case<br>Prep. II<br>19.533<br>Int. Indust. Psy. II<br>94.630<br>Civ. Law in Crim.<br>Just. II | 21.503<br>Sociology III<br>94.557<br>Invest. Report<br>Writing<br>19.534<br>Int. Indust. Psy. III<br><br>Elective |
| <b>4th Year</b> | 94.563<br>Criminology I<br>45.570<br>Elect. Data Proc. I<br>94.577<br>Gov. Sec. Prog. I<br>22.514<br>Amer. Const. Law                    | 94.564<br>Criminology II<br>45.571<br>Elect. Data Proc. II<br>94.578<br>Gov. Sec. Prog. II<br>22.515<br>Civil Rights                         | 94.565<br>Del. Prevention<br>45.572<br>Elect. Data Proc. III<br>94.579<br>Gov. Sec. Prog. III<br><br>Elective     |

## SUGGESTED ELECTIVES AND ADDITIONAL DEPARTMENT OFFERINGS

### Suggested Electives\*

|        |  |   |
|--------|--|---|
| 94.595 | The National Law Enforcement Seminar               | 3 |
| 94.596 | Hospital Security                                  | 2 |
| 94.614 | Seminar in Law Enforcement: Interviewing Practicum | 2 |
| 94.619 | Seminar in Law Enforcement: Forensic Laboratory    | 2 |
| 94.617 | Seminar in Law Enforcement: Criminal Behavior      | 2 |
| 94.624 | Seminar in Law Enforcement: Executive Development  | 2 |
| 94.626 | Seminar in Law Enforcement: Data Processing        | 2 |
| 32.609 | Conversational Spanish I                           | 4 |
| 32.610 | Conversational Spanish II                          | 4 |
| 32.611 | Conversational Spanish III                         | 4 |

### Additional Department Offerings

|        |  |   |
|--------|--|---|
| 94.604 | Seminar in Law Enforcement: Youth Crime Control  | 2 |
| 94.605 | Seminar in Law Enforcement: Victimology  | 2 |
| 94.606 | Seminar in Law Enforcement: International Crime Control  | 2 |
| 94.607 | Seminar in Law Enforcement: Grantmanship   | 2 |
| 94.608 | Seminar in Law Enforcement: Law Enforcement<br>Operational Intelligence  | 2 |
| 94.609 | Independent Studies  | 2 |
| 94.610 | Seminar in Law Enforcement: Collective Bargaining  | 2 |
| 94.611 | Man, Law, and Society I  | 2 |
| 94.612 | Man, Law, and Society II   | 2 |
| 94.613 | Man, Law, and Society III  | 2 |
| 94.615 | Seminar in Law Enforcement: Organized Crime  | 2 |
| 94.616 | Seminar in Law Enforcement: Minorities and the Urban Crisis  | 2 |
| 94.618 | Seminar in Law Enforcement: Prosecutive Development  | 2 |
| 94.620 | Seminar in Law Enforcement: Intervention, Strategies, and<br>Tactics for Law Enforcement (Counseling Techniques) | 2 |
| 94.623 | Seminar in Law Enforcement: Drugs  | 2 |
| 94.625 | Seminar in Law Enforcement: Mental Health and the Police   | 2 |
| 94.650 | Fire Investigation and Arson I   | 2 |
| 94.651 | Fire Investigation and Arson II  | 2 |
| 94.658 | Alcohol Problems in Law Enforcement  | 2 |
| 94.652 | Law Enforcement Fiscal Management  | 2 |
| 94.653 | Massachusetts Criminal Law   | 2 |

\*While students may elect courses in their major field in excess of the minimum number required, they are encouraged to elect courses from any other curricula in the University College catalog.

# health professions programs

**Helene A. Loux**, Associate Dean  
Director, Health Professions Programs  
Telephone 437-3321

## **Aims**

Programs in Health Sciences are offered through University College in order to help mature students improve their educational preparation for advancement and service in hospitals and other health agencies through part-time study.

In addition to offering courses in the liberal arts and in business administration, specialized courses for particular categories of health personnel are offered when such offerings are justified in terms of community and student need. The unique resources of the Boston area as a medical center offer excellent support facilities for these health-related programs.

Degree programs, both associate and baccalaureate, are designed to provide professional specialization and general cultural development. All programs are designed to meet the accreditation standards of the Council on Medical Education of the American Medical Association and of licensing or registration boards where such exist.

## **Course Distribution**

While students will graduate from the programs in health science prepared to assume a position in the health profession of his choice, and in which he has specialized, it is the goal of Northeastern University that graduates will have a balanced educative background. To this end, the following curriculum design will be in effect for most programs.

|   |        |
|---|--------|
| Professional and Professionally Related | 35-50% |
| Basic and Allied Sciences               | 25-40% |
| Liberal Arts (non-science)              | 25-40% |

Students will choose electives to fulfill course distribution requirements and to equal the number of credits required for the specific degree.

## **Clinical Assignments**

Clinical assignments are available for students whose program requires directed applied study in a clinical setting. In most instances didactic information is presented at the University while clinical practice is at various hospitals or other health agencies in the Greater Bos-

ton community. Academic credit earned during the practicum is applicable in most instances, toward the degree requirement.

Students accepting clinical assignments in hospitals, either as part of their clinical rotations or cooperative assignments, are expected to adhere to hospital dress codes and any other requirements of the hospital, all of which are outside University control.

**HEALTH SCIENCE      Bachelor of Science in Health Science Degree**

The Bachelor of Science in Health Science is available to students holding an Associate Degree and/or certification, registration, or licensure (as defined by University regulations) in a specific health profession.

**REQUIREMENTS FOR THE DEGREE**

| <b>DISTRIBUTION REQUIREMENTS</b>           |  | <b>quarter hours</b> |
|--|--|----------------------|
| A. Liberal Arts (non-science)              | 25-40%   | 44-70                |
| B. Basic and Allied Science                | 25-40%   | 44-70                |
| C. Professional and Professionally-related | 35-50%   | 62-86                |
| D. Electives—to equal                      | 100%   | <hr/> 174            |
| <b>A. LIBERAL ARTS</b>                     |  |                      |
| (Non-science)                              |  |                      |
| <b>Required</b>                            |  |                      |
| English                                    |  | 8                    |
| 30.601, 30.602 or 30.603                   | Composition and Rhetoric I, II,<br>(or intensive)<br>or equivalent   |                      |
| 30.604, 30.605 or 30.606                   | Introduction to Literary Forms I & II<br>(or intensive)<br>or equivalent   |                      |
| Humanities                                 |  | 12                   |
| (Recommended Courses)                      |  |                      |
|  | Introduction to Philosophy<br>Spanish or Other Modern Language<br>Communications or Speech<br>Literature<br>Arts |                      |
| Social Sciences                            |  | 12                   |
| (Recommended Courses)                      |  |                      |
|  | Psychology<br>History<br>Sociology<br>Principles of Political Science  |                      |
| Electives                                  | to equal at least 12 quarter hours   | 12                   |
|  |  | <hr/> 44             |

**B. BASIC AND ALLIED SCIENCES**

| Required   | quarter hours |
|--|---------------|
| General  |               |
| General and Animal Biology   | 8             |
| Anatomy and Physiology   | 9             |
| Microbiology   | 4             |
| Math or Applied Math<br>(as profession demands)  | 6             |
| General Chemistry<br>(if profession demands)   | 9             |
| Advanced   | 8             |
| To be taken after matriculation into B.S. program and to be<br>determined by profession. | —             |
|  | <b>44</b>     |

**C. PROFESSIONAL AND PROFESSIONALLY RELATED**

| Required   | quarter hours |
|--|---------------|
| General  | <b>14</b>     |
| 86.504, 86.505, 86.506 Foundations of Medical Science I, II, III | 6             |
| or   |               |
| 86.512, 86.513   |               |
| 86.541, 86.542 Medical Care and Current Social<br>Problems       | 4             |
| 86.521, 86.522 Public Health                                     | 4             |
| 87.544, 87.545 Epidemiology                                      | 4             |
| or equivalent  |               |
| Basic Professional Courses                                       | (variable)    |

Those required for professional certification, registration, or licensure as defined by University regulations.

Advanced Professional or Professionally-related Courses **18-24**  
To be taken after matriculation into B.S. program:

|  |     |
|--|-----|
| Specific profession or in general health area<br>(As determined by program director or academic counselor) | 6-8 |
| Health Science Education<br>(Or related education courses)   | 6-8 |
| Health Science Administration<br>(Or related administrative courses)                                       | 6-8 |

**D. ELECTIVES**

To equal 174 q.h. credits and to fulfill distribution requirements.

All students admitted to this program will be interviewed by Program Director and/or Admissions Committee. Specific applications are available.

**MANAGEMENT IN HEALTH AGENCIES AND INSTITUTIONS****Bachelor of Science Degree****Basic Courses—required**

|         |         |        |   | quarter hours |    |
|---------|---------|--------|---|---------------|----|
| 10.327, | 10.328, | 10.329 | Mathematics I, II, III                      | 6             |    |
| 19.501, | 19.502, | 19.503 | Psychology I, II, III                       | 6             |    |
| 23.501, | 23.502, | 23.503 | Western Civilization I, II, III             | 6             |    |
|         | 30.601, | 30.602 | Composition and Rhetoric I, II              | 4             |    |
|         | 30.604, | 30.605 | Introduction to Literary Forms I, II        | 4             |    |
| 39.501, | 39.502, | 39.503 | Economic Principles and Problems I, II, III | 6             | 32 |

**Core Courses—required***Liberal Arts*

|             |         |        |  |     |    |
|-------------|---------|--------|--|-----|----|
| 18.511,     | 18.512, | 18.513 | Biology I, II, III                         | 12* |    |
|             |         | 19.532 | Industrial Psychology                      | 2   |    |
| 21.501,     | 21.502, | 21.503 | Sociology I, II, III                       | 6   |    |
| 22.501,     | 22.502, | 22.503 | Principles of Political Science I, II, III | 6   |    |
| 26.501,     | 26.502, | 26.503 | Introduction to Philosophy I, II, III      | 6   |    |
| Literature: |         |        | English, American, or other in translation | 6   |    |
| Fine Arts:  |         |        | Art, Music, or Theater Arts                | 6   | 44 |

*Management*

|         |         |        |  |   |    |
|---------|---------|--------|--|---|----|
| 41.501, | 41.502, | 41.503 | Accounting Principles I, II, III       | 6 |    |
| 44.507, | 44.508, | 44.509 | Corporate Finance I, II, III           | 6 |    |
| 45.501, | 45.502, | 45.503 | Management and Organization I, II, III | 6 |    |
|         | 45.511, | 45.512 | Human Relations in Personnel I, II     | 4 |    |
| 45.513, | 45.514, | 45.515 | Personnel Management I, II, III        | 6 |    |
| 45.570, | 45.571, | 45.572 | Electronic Data Processing I, II, III  | 6 | 34 |

*Health Care Administration*

|         |         |        |   |   |  |
|---------|---------|--------|---|---|--|
|         |         | 86.502 | Hospital Law and Ethics                   | 2 |  |
| 86.504, | 86.505, | 86.506 | Foundations of Medical Science I, II, III | 6 |  |
|         |         | 86.507 | Medical Terminology                       | 2 |  |

In addition, each student will select *one* of the following sequences:

|         |         |        |  |   |    |
|---------|---------|--------|--|---|----|
| 86.581, | 86.582, | 86.583 | Hospital Organization and Management I, II, III—OR | } | 6  |
| 86.571, | 86.572, | 86.573 | Long-Term Care Administration I, II, III—OR        |   |    |
|         | 86.521, | 86.522 | Public Health I, II (4) and                        |   |    |
|         |         | 86.511 | Personal and Community Health (2)                  |   |    |
|         |         |        |  |   | 16 |

**Elective Courses:**

|               |    |    |
|---------------|----|----|
| Liberal Arts  | 6  |    |
| Management    | 6  |    |
| From Any Area | 36 | 48 |

**Total Credits****174**

**Note:** In addition to the required coursework, proof of understanding of principles of descriptive statistics must be demonstrated. This requirement may be satisfied by: a) successful completion of the examination on descriptive statistics administered by Northeastern's Center for Programmed Study; or b) completion of the program on descriptive statistics at the Center; or c) completion of the University College course 39.511, *Statistics I*, with a grade of C or better. This last option may also be included in the elective credits required in this curriculum. This requirement should be satisfied before completion of the first 96 credits of coursework.

A significant number of elective courses is allowed, to permit each student to select, with his adviser, a sequence of courses which will represent examination in some depth of a subject of particular interest. Ordinarily, these courses would not be distributed over more than two subject areas.

## MANAGEMENT IN HEALTH AGENCIES AND INSTITUTIONS

### Recommended Course Sequence for the 8-Year Program Leading to the Bachelor of Science Degree

|                 | Quarter 1  | Quarter 2   | Quarter 3  |
|-----------------|--|---|--|
| <b>1st Year</b> | Medical Terminology I<br>Mgmt. & Org. I<br>Math. I   | Comp. I<br>Mgmt. & Org. II<br>Math. II  | Comp. II<br>Mgmt. & Org. III<br>Math. II   |
| <b>2nd Year</b> | Western Civ. I<br>Acctg. I<br>Biology I  | Western Civ. II<br>Acctg. II<br>Biology II  | Western Civ. III<br>Acctg. III<br>Biology III  |
| <b>3rd Year</b> | Psych. I<br>Elective<br>Intro. to Lit. Forms I   | Psych. II<br>Elective<br>Intro. to Lit. Forms II  | Psych. III<br>Elective<br>Hospital Law   |
| <b>4th Year</b> | Ind. Psych.<br>Pers. Mgmt. I<br>Found. Med. Sci. I   | Human Rel. I<br>Pers. Mgmt. II<br>Found. Med. Sci. II   | Human Rel. II<br>Pers. Mgmt. III<br>Found. Med. Sci. III   |
| <b>5th Year</b> | Econ. I<br>Fine Arts<br>Mgmt. Elective<br>Literature   | Econ. II<br>Fine Arts<br>Mgmt. Elective<br>Literature   | Econ. III<br>Fine Arts<br>Mgmt. Elective<br>Literature   |
| <b>6th Year</b> | Soc. I<br>E.D.P. I<br>L. A. Elective<br>Corp. Fin. I   | Soc. II<br>E.D.P. II<br>L.A. Elective<br>Corp. Fin. II  | Soc. III<br>E.D.P. III<br>L.A. Elective<br>Corp. Fin. III  |
| <b>7th Year</b> | Pol. Sci. I<br>Hospital Org.,<br>Long-Term C. I, or<br>Pub. Health I<br>Elective<br>Elective<br>Elective | Pol. Sci. II<br>Hospital Org.,<br>Long-Term C. II, or<br>Pub. Health II<br>Elective<br>Elective<br>Elective | Pol. Sci. III<br>Hospital Org.,<br>Long-Term C. III, or<br>Per. Comm. Health<br>Elective<br>Elective<br>Elective |
| <b>8th Year</b> | Phil. I<br>Elective<br>Elective  | Phil. II<br>Elective<br>Elective  | Phil. III<br>Elective<br>Elective  |

**NURSING HOME ADMINISTRATION CERTIFICATE PROGRAM**

Under the Social Security Law—Title XIX, programs for the licensure of nursing home administrators must be available in each state. In order to provide the educational preparation required by Title XIX and to meet the immediate needs of long-term care and nursing home administrators, while still providing academically structured courses that will apply to a degree program, the following sequence is offered:

|                      |         |        |   |           |
|----------------------|---------|--------|---|-----------|
| 19.501,              | 19.502, | 19.503 | Psychology I, II, III                     | 6         |
|                      |         | 19.532 | Industrial Psychology                     | 2         |
| 41.501,              | 41.502, | 41.503 | Accounting Principles I, II, III          | 6         |
|                      |         | 45.501 | Management and Organization I             | 2         |
|                      | 45.511, | 45.512 | Human Relations in Personnel I, II        | 4         |
|                      |         | 86.502 | Hospital Law and Ethics                   | 2         |
| 86.504,              | 86.505, | 86.506 | Foundations of Medical Science I, II, III | 6         |
|                      | 86.507, | 86.508 | Medical Terminology I, II                 | 4         |
| 86.571,              | 86.572, | 86.573 | Long-Term Care Administration I, II, III  | 6         |
| 86.577,              | 86.578, | 86.579 | Long-Term Care Administration IV, V, VI   | 6         |
| <b>Total Credits</b> |         |        |   | <b>44</b> |

Successful completion of this course of study with a quality point average of 2.00 will entitle the student to a letter attesting to this accomplishment and will prepare the student to write the present licensure examination in Massachusetts. The Board of Registration in Nursing Home Administration in Massachusetts will require two years of college level study (four years, part-time) by 1975 and a baccalaureate degree by 1978.

Completion of the above described sequence of courses and possession of the letter documenting this fact does not constitute graduation from University College.

Program Consultant:

*Robert Lovejoy, M.S.*

*Executive President, Waltham Hospital*

*Lecturer in Health Science, Northeastern University*

Course Consultant in Nursing Home

Administration Program:

*Jack Chilnick, M.Ed.*

*Executive Director, Jewish Rehabilitation*

*Center for the Aged of the North Shore*

*Lecturer in Health Science, Northeastern University*



## MEDICAL RECORD ADMINISTRATION

### The Profession

The medical record administrator has varied responsibilities relating to health information systems. He designs systems; he plans, organizes, and directs medical record services; he develops, analyzes, and evaluates medical records and indexes; he cooperates with the medical staff in developing methods for evaluation of patient care; he cooperates with the medical and administrative staff in research projects utilizing health care information; and provides advisory services relating to health information systems on local, national, and international level.

The Medical Record Administration Program leading to a baccalaureate degree has been in effect at Northeastern University since 1966. The professional certification program, open to students already holding baccalaureate degrees and offering the required professional courses, was instituted in 1967.

Northeastern University's Programs in Medical Record Administration are approved by the American Medical Association's Council on Medical Education, in collaboration with the Committee on Education and Registration of the American Medical Record Association.

**Note:** *This program is also offered on a full-time (day) basis.*

*The information following refers only to the part-time (evening) program. Further information about this Program and/or information about the Day Program may be obtained by contacting the Allied Health Professions Office, 201 Robinson Hall.*

**MEDICAL RECORD ADMINISTRATION Bachelor of Science Degree**

Completion of this program qualifies a student for admission to the professional registration examinations conducted by the American Medical Record Association.

| Basic Courses—required |         |        |  | quarter hours |    |
|------------------------|---------|--------|--|---------------|----|
| 10.327,                | 10.328, | 10.329 | Mathematics I, II, III                         | 6             |    |
| 19.501,                | 19.502, | 19.503 | Psychology I, II, III                          | 6             |    |
| 23.501,                | 23.502, | 23.503 | Western Civilization I, II, III                | 6             |    |
|                        | 30.601, | 30.602 | Composition and Rhetoric I, II                 | 4             |    |
|                        | 30.604, | 30.605 | Introduction to Literary Forms I, II           | 4             |    |
| 39.501,                | 39.502, | 39.503 | Economic Principles and Problems<br>I, II, III | 6             | 32 |
|                        |         |        |  | —             |    |

**Core Courses—required**

|                      |         |        |  |   |    |
|----------------------|---------|--------|--|---|----|
| <i>Liberal Arts:</i> |         |        |  |   |    |
| 18.511,              | 18.512, | 18.513 | General Biology and Laboratory I, II, III  | 12  |    |
| 18.524,              | 18.525, | 18.526 | Anatomy and Physiology I, II, III          | 9   |    |
|                      |         | 19.532 | Industrial Psychology                      | 2   |    |
| 21.501,              | 21.502, | 21.503 | Sociology I, II, III                       | 6   |    |
| 22.501,              | 22.502, | 22.503 | Principles of Political Science I, II, III | 6   |    |
| 26.501,              | 26.502, | 26.503 | Introduction to Philosophy I, II, III      | 6   |    |
| <i>Literature:</i>   |         |        |  | English, American or other in translation | 6  |
| <i>Fine Arts:</i>    |         |        |  | Art, Music, or Theatre Arts               | 6  |
|                      |         |        |  |   | 53 |
|                      |         |        |  |   | —  |

**Professional and Professionally-related Courses—required**

|         |         |        |  |    |    |
|---------|---------|--------|--|----|----|
| 45.501, | 45.502, | 45.503 | Management and Organization I, II, III                       | 6  |    |
|         | 45.511, | 45.512 | Human Relations in Organizations                             | 4  |    |
|         | 45.570, | 45.571 | Electronic Data Processing I, II                             | 4  |    |
|         |         | 86.585 | Medical Computer Science                                     | 2  | 16 |
|         |         |        |  | —  |    |
|         |         | 86.502 | Hospital Law and Ethics                                      | 2  |    |
| 86.504, | 86.505, | 86.506 | Foundations of Medical Science I, II, III                    | 6  |    |
|         | 86.507, | 86.508 | Medical Terminology I, II                                    | 4  | 12 |
|         |         |        |  | —  |    |
| 86.551, | 86.552, | 86.553 | Organization of the Medical Records<br>Department I, II, III | 6  |    |
| 86.554, | 86.555, | 86.556 | Medical Record Science I, II, III                            | 12 |    |
|         | 85.557, | 86.558 | Medical Record Science IV, V                                 | 8  |    |
| 86.586, | 86.587, | 86.588 | Applied Medical Record Science I, II, III                    | 8  | 34 |
|         |         |        |  | —  |    |

**Elective Courses**

|               |    |    |
|---------------|----|----|
| Liberal Arts  | 6  |    |
| From Any Area | 22 | 28 |
|               |    | —  |

**Total Credits** **175**

Candidates who wish to major in this program must be interviewed by the Program Director. Arrangements for this interview may be made through the Allied Health Professions Office, 201 Robinson Hall. No candidate will be considered as matriculated until this requirement has been met.

**Note:** *In addition to the required coursework, proof of understanding of principles of descriptive statistics must be demonstrated. This requirement may be satisfied by: a) successful completion of the examination on descriptive statistics administered by Northeastern's Center for Programmed Study; or b) completion of the program on descriptive statistics at the Center; or c) completion of the University College course 39.511; Statistics I, with a grade of C or better. This last option may also be included in the elective credits required in this curriculum. This requirement should be satisfied before completion of the first 96 credits of coursework.*

**Recommended Course Sequence for the 8-Year Program Leading to the Bachelor of Science Degree in Medical Records and qualification for examination.**

|                 | Quarter 1  | Quarter 2   | Quarter 3   |
|-----------------|--|---|---|
| <b>1st Year</b> | Comp. and Rhet. I<br>Mgmt. & Org. I<br>Math. I                 | Comp. and Rhet. II<br>Mgmt. & Org. II<br>Math. II                 | Elective<br>Mgmt. & Org. III<br>Math. III                                 |
| <b>2nd Year</b> | West. Civ. I<br>Gen. Biol. & Lab. I<br>Elective                | West. Civ. II<br>Gen. Biol. & Lab. II<br>Elective                 | West. Civ. III<br>Gen. Biol. & Lab. III<br>Elective                       |
| <b>3rd Year</b> | Psych. I<br>Anat. & Physiol. I<br>Med. Termin. I<br>Lit. I     | Psych. II<br>Anat. & Physiol. II<br>Med. Termin. II<br>Lit. II    | Psych. III<br>Anat. & Physiol. III<br>Hospital Law<br>Elective            |
| <b>4th Year</b> | Literature<br>Soc. I<br>Ind. Psych.<br>Found. Med. Sci. I      | Literature<br>Soc. II<br>Human Rel. I<br>Found. Med. Sci. II      | Literature<br>Soc. III<br>Human Relations II<br>Found. Med. Sci. III      |
| <b>5th Year</b> | Econ. I<br>Fine Arts<br>Med. Rec. Sci. I                       | Econ. II<br>Fine Arts<br>Med. Rec. Sci. II                        | Econ. III<br>Fine Arts<br>Med. Rec. Sci. III                              |
| <b>6th Year</b> | Med. Rec. Sci. IV*<br>Electives                                | Med. Rec. Sci. V*<br>Electives                                    | Electives   |
| <b>7th Year</b> | Pol. Sci. I<br>Org. Med. Rec. I<br>L.A. Elective               | Pol. Sci. II<br>Org. Med. Rec. II<br>L.A. Elective                | Pol. Sci. III<br>Org. Med. Rec. III<br>L. A. Elective<br>Elective         |
| <b>8th Year</b> | Phil. I<br>E.D.P. I<br>Elective<br>Applied Med. Rec.<br>Sci. I | Phil. II<br>E.D.P. II<br>Elective<br>Applied Med. Rec.<br>Sci. II | Phil. III<br>Med. Comp. Sci.<br>Elective<br>Applied Med. Rec.<br>Sci. III |

\*Required clinical experience hours must be arranged in relation to courses starred.

**MEDICAL RECORDS****Certification Program**

Candidates who wish to qualify for admission to the professional examination leading to registration as a Medical Record Administrator, RRA, and who already hold a baccalaureate degree in another field of study from a college or university acceptable to Northeastern University, may undertake the following course work. Successful completion of this course sequence with a cumulative point average of 2.00 will lead to certification from University College that the candidate has completed a professional program in Medical Records Science. In addition to the required courses listed below, candidates must complete one year of a natural science, such as Biology, Chemistry, Microbiology, etc. This requirement is in addition to the laboratory course in Anatomy and Physiology.

**Courses required for Professional Certification:**

|                      |         |        |  | quarter hours |
|----------------------|---------|--------|--|---------------|
| 18.524,              | 18.525, | 18.526 | Anatomy and Physiology I, II, III                            | 9             |
| 45.501,              | 45.502, | 45.503 | Management and Organization I, II, III                       | 6             |
|                      |         | 86.502 | Hospital Law and Ethics                                      | 2             |
| 86.504,              | 86.505, | 86.506 | Foundations of Medical Science I, II, III                    | 6             |
|                      | 86.507, | 86.508 | Medical Terminology I, II                                    | 4             |
| 86.554,              | 86.555, | 86.556 | Medical Record Science I, II, III                            | 12            |
|                      | 86.557, | 86.558 | Medical Record Science IV, V                                 | 8             |
| 86.551,              | 86.552, | 86.553 | Organization of the Medical<br>Records Department I, II, III | 6             |
|                      | 45.570, | 45.571 | Electronic Data Processing I, II                             | 4             |
|                      |         | 86.585 | Medical Computer Science                                     | 2             |
| 86.586,              | 86.587, | 86.588 | Applied Medical Records<br>Science I, II, III                | 8             |
| <b>Total Credits</b> |         |        |  | <b>67</b>     |

Candidates who wish to matriculate in this program must be interviewed by the Program Director. Arrangements for this interview may be through the Allied Health Professions Office, 206 Mugar Building. No candidate will be considered as matriculated until this requirement has been met.

**Note:** In addition to the required coursework, proof of understanding of principles of descriptive statistics must be demonstrated. This requirement may be satisfied by: a) successful completion of the examination on descriptive statistics administered by Northeastern's Center for Programmed Study; or b) completion of the program on descriptive statistics at the Center; or c) completion of the University College course 39.511, Statistics I, with a grade of C or better. This last option may also be included in the elective credits required in this curriculum. This requirement should be satisfied before completion of the first 96 credits of coursework.

**Note:** This sequence is available through the evening program only.

## MEDICAL RECORD ADMINISTRATION

### Recommended Course Sequence for the 3-Year Program Leading to a Certificate in Medical Record Administration

This program is open to candidates who hold an acceptable baccalaureate degree only.

*Prerequisite:* A College-level course in General Biology

| <b>1st<br/>Year</b> | <b>Quarter 1</b>            | <b>Quarter 2</b>             | <b>Quarter 3</b>              |
|---------------------|-----------------------------|------------------------------|-------------------------------|
|                     | Mgmt. & Org. I              | Mgmt. & Org. II              | Mgmt. & Org. III              |
|                     | Anat. & Physiol. I          | Anat. & Physiol. II          | Anat. & Physiol. III          |
|                     | Found. Med. Sci. I          | Found. Med. Sci. II          | Found. Med. Sci. III          |
|                     | Med. Termin. I              | Med. Termin. II              |                               |
| <b>2nd<br/>Year</b> | Med. Rec. Sci. I            | Med. Rec. Sci. II            | Med. Rec. Sci. III            |
|                     | EDP I                       | EDP II                       | Hospital Law                  |
|                     |                             |                              | Med. Comp. Sci.               |
| <b>3rd<br/>Year</b> | *Med. Rec. Sci. IV          | *Med. Rec. Sci. V            |                               |
|                     | Org. Med. Rec.<br>Dept. I   | Org. Med. Rec.<br>Dept. II   | Org. Med. Rec.<br>Dept. III   |
|                     | Applied Med.<br>Rec. Sci. I | Applied Med.<br>Rec. Sci. II | Applied Med.<br>Rec. Sci. III |

### Hospitals Affiliated as Primary Teaching Units

Beth Israel Hospital, Boston  
Children's Hospital Medical Center, Boston  
Massachusetts General Hospital, Boston  
New England Medical Center  
Boston Hospital for Women  
Mt. Auburn Hospital, Cambridge

### Curriculum Advisory Committee in Medical Record Administration

Sr. Margaret MacDougall, RRA  
*Holyoke Community College*  
Janice E. Gardner, RRA  
*Brookline Hospital*  
Joyce Gormley, RRA  
*Massachusetts General Hospital, Boston*  
Marjorie Gurney, RRA  
*Massachusetts Hospital Association, Burlington*  
Dorothy Richmond, RRA  
*Beth Israel Hospital, Boston*  
Susan Winship, RRA  
*Northern Essex Community College, Haverhill*  
Lillian Liebich, RRA  
*North Adams Regional Hospital, North Adams*

\*Required clinical experience hours must be arranged in relation to courses starred.

## **Northeastern University Representatives**

### **(Ex officio)**

Meredith Cameron, RRA

*Acting Director, Medical Records Program*

Helene A. Loux, Ph.D.

*Associate Dean for Health Professions*

*The College of Pharmacy and Allied Health Professions*

## **RESPIRATORY THERAPY (full-time)**

### **Associate in Science Degree**

#### **The Profession**

As medical knowledge has advanced and become highly specialized, trained personnel in the fields related to medicine have become important members of the health care team. As members of this team, respiratory therapists support and assist in the effort toward optimum patient care by using a variety of treatments and rehabilitative procedures to help patients with respiratory problems. They work in modern health care facilities with sophisticated respirators, ultrasonic nebulizers, blood gas machines, pulmonary function equipment, and oxygen administering devices.

As physicians rely more and more on specialized techniques and equipment, the respiratory therapist will play an increasingly important role in patient care.

The first year of this program may be completed by study on a part-time basis over two or more years. *An interview with the program faculty is required prior to registration in 86.591, Introduction to Respiratory Therapy I.* The candidate who completes this part-time study with a cumulative average "C" or better may then apply for admission directly into the second year full-time program. Entrance to the full-time program is on a competitive basis. The second and third years of the full-time program are spent in alternating academic and cooperative quarters. Each academic quarter includes twelve hours per week of applied study in Respiratory Therapy as well as didactic study, liberal arts, and electives.

**Prerequisite:** College-Level or College-Preparatory General Biology

| <b>Freshman Year Courses</b>                                    |                                |  | <b>quarter hours</b> |
|---|--------------------------------|--|----------------------|
| 10.327, 10.328, 10.329  | Math I, II, III                |  | 6                    |
| 30.603 (or 30.601 and 30.602) and 30.606 (or 30.603 and 30.604) | Composition & Rhetoric         |  | 4                    |
| 18.524, 18.525, 18.526  | Introd. to Lit. Forms          |  | 4                    |
| 19.501, 19.502  | Human Anatomy and Physiology   |  | 9                    |
| 86.502  | Psychology                     |  | 4                    |
| 18.521, 18.522  | Hospital Law & Ethics          |  | 2                    |
| 86.591, 86.592, 86.593  | Microbiology I, II             |  | 8                    |
|   | Introd. to Respiratory Therapy |  | 12                   |

#### **Suggested Sequence of Courses for Freshman Program**

|                 | <b>Quarter I</b>   | <b>Quarter II</b>  | <b>Quarter III</b>                                  |
|-----------------|--|--|---|
| <b>1st Year</b> | Math<br>Anatomy & Physiol.<br>Psychology                 | Math<br>Anatomy & Physiol.<br>Psychology                         | Math<br>Anatomy & Physiol.<br>Hospital Law & Ethics |
| <b>2nd Year</b> | Comp. & Rhet.<br>Intro. Resp.<br>Therapy<br>Microbiology | Introd. to Lit. Forms<br>Intro. Resp.<br>Therapy<br>Microbiology | Intro. Resp.<br>Therapy                             |

Students completing these courses must now apply to the full-time program in order to complete the requirements for the Associate in Science Degree and for eligibility to write the national examination for registration as a Respiratory Therapist.

Students accepted into the full-time day program will follow the basic college curriculum in effect at the time of their acceptance.

**Medical Advisory Committee**

Leonard Bushnell, M.D., Beth Israel Hospital  
Dean S. Crocker, M.D., Children's Hospital Medical Center  
John Hedley-Whyte, M.D., Beth Israel Hospital  
Henning Pontoppidan, M.D., Massachusetts General Hospital  
LeRoy Van Dam, M.D., Peter Bent Brigham Hospital

**Academic Representatives (Ex Officio)**

Dean Crocker, M.D., Medical Consultant  
Evelyn L. Cassara, B.S., R.N., A.R.I.T., Program Director  
Helene A. Loux, Ph.D., Assoc. Dean for Health Professions, College of  
Pharmacy and Allied Health Professions



**MEDICAL LABORATORY SCIENCE—CYTOTECHNOLOGY****Bachelor of Science Degree or Associate in Science Degree****The Profession**

Cytotechnology is a specialty in the broader field of medical laboratory science. Cytotechnologists are employed in pathology laboratories, where they expertly examine slides of cells looking for minute abnormalities which are the early warning signs of cancer and related disease. Cytotechnology occupies a highly important place in clinical medicine, requiring a technologist with highly specialized laboratory training and a sound academic background.

The programs are offered through University College and are conducted in affiliation with the several hospitals which comprise the Boston School of Cytotechnology. The programs lead to the Associate in Science or the Bachelor of Science Degree, which are awarded by University College. Completion of the program qualifies a student for admission to the professional examination conducted by the Board of Registry of the American Society of Clinical Pathologists.

The basic sciences and the general education courses are offered evenings, but the professional courses are offered only full-time, days, in cooperation with the affiliated hospitals. Students planning to enter the professional courses are advised to consult the program coordinator prior to the Winter Quarter preceding entrance to the hospital program.

*Prerequisite:* Satisfactory completion of the Mathematics Placement Test or the Basic Mathematics I and II courses (10.330 and 10.331). The Mathematics Placement Test must be taken well in advance of the registration date.

**FIRST YEAR**

| <b>Course Number</b>   | <b>Course</b>                            | <b>quarter hours</b> |
|------------------------|--|----------------------|
| 10.327, 10.328, 10.329 | Mathematics I, II, III                   | 6                    |
|                        | or                                       |                      |
| 10.307, 10.308         | College Algebra & Trigonometry           |                      |
| 30.603                 |  |                      |
| or 30.601, 30.602      | Composition & Rhetoric I, II             | 4                    |
| 18.511, 18.512, 18.513 | Biology I, II, III                       | 12                   |
| 87.100                 | Medical Laboratory Science Orientation   | 1                    |
| 86.541, 86.542         | Medical Care and Current Social Problems | 4                    |

**SECOND YEAR**

| <b>Course Number</b>   | <b>Course</b>                         | <b>quarter hours</b> |
|------------------------|---------------------------------------|----------------------|
| 18.524, 18.525, 18.526 | Human Anatomy & Physiology I, II, III | 9                    |
| 12.544, 12.545, 12.546 | General Chemistry I, II, III          | 6                    |
| 12.547, 12.548, 12.549 | General Chemistry Lab. I, II, III     | 3                    |
| 19.501, 19.502, 19.503 | Psychology                            | 6                    |
|                        | or                                    |                      |
| 22.501, 22.502, 22.503 | Principles of Political Science       |                      |
|                        | or                                    |                      |
|                        | Other Social Science Elective         |                      |
| 30.604, 30.605 or      |                                       |                      |
|                        | 30.606 Introd. to Literary Forms      | 4                    |
|                        | 86.502 Hospital Law and Ethics        | 2                    |

**THIRD YEAR**

| <b>Course Number</b>   | <b>Course</b>                     | <b>quarter hours</b> |
|------------------------|-----------------------------------|----------------------|
| 87.101                 | Basic Medical Lab. Science (Fall) | 4                    |
| 87.102 or 87.541       | Hematology                        | 2                    |
| 18.557, 18.558, 18.556 | Genetics I, II and Genetics Lab.  | 6                    |
| 18.551, 18.552, 18.553 | Histology — Organology I, II, III | 6                    |
| 18.521                 | Microbiology                      | 4                    |
|                        | Humanities Electives              | 4                    |

**FOURTH YEAR**

12 months at an AMA-approved Hospital School of Cytotechnology. Those students admitted to the Boston School of Cytotechnology associated with North-eastern University will take the following courses:

|                        |        |  |    |
|------------------------|--------|--|----|
|                        | 87.508 | Introduction to Cytotechnology                   | 2  |
|                        | 87.528 | Cytopathology I                                  | 2  |
|                        | 87.538 | Cytopathology II                                 | 2  |
|                        | 87.558 | Cytopathology III                                | 2  |
|                        | 87.568 | Cytogenetics and New Concepts                    | 2  |
|                        | 87.598 | Special Topics                                   | 2  |
|                        | 87.608 | Seminar: Cytopathology Criteria and Correlations | 2  |
| 87.518, 87.548, 87.578 | 87.578 | Applied Cytology I, II, III, IV                  | 14 |
|                        | 87.618 |  |    |

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**Total A.S. Degree 111**

**FIFTH YEAR**

| <b>Course Number</b>   | <b>Course</b>                        | <b>quarter hours</b> |
|------------------------|--------------------------------------|----------------------|
| 86.504, 86.505, 86.506 | Foundations of Medical Science       | 6                    |
| 11.304, 11.305, 11.306 | *General Physics I, II, III          | 6                    |
|                        | or                                   |                      |
| 86.581, 86.582, 86.583 | Hospital Organization and Management |                      |
|                        | Modern Language                      | 9                    |
|                        | or                                   |                      |
|                        | Electives                            |                      |

**SIXTH YEAR**

| <b>Course Number</b>   | <b>Course</b>                         | <b>quarter hours</b> |
|------------------------|---------------------------------------|----------------------|
| 12.531, 12.532, 12.533 | Organic Chemistry I, II, III, and     | 6                    |
| 12.534, 12.535, 12.536 | Organic Chemistry Lab. I, II, III     | 6                    |
| 86.574, 86.575,        | Health, Disease, and Disability       | 4                    |
| 29.501, 29.502, 29.503 | Effective Speaking                    | 6                    |
|                        | or                                    |                      |
|                        | Other Speech or Communications Course |                      |

**SEVENTH YEAR**

| <b>Course Number</b>   | <b>Course</b>                    | <b>quarter hours</b> |
|------------------------|----------------------------------|----------------------|
| 39.501, 39.502, 39.503 | Economics, Principles & Problems | 6                    |
|                        | or                               |                      |
|                        | Other Social Science Elective    |                      |
| 86.521, 86.522         | Public Health                    | 4                    |
|                        | or                               |                      |
| 87.544, 87.545         | Epidemiology                     |                      |
| 87.588                 | Cytopathology Seminar            | 2                    |
| 87.546                 | Medical Laboratory Science       |                      |
|                        | Education Seminar                | 2                    |
| 87.547                 | Medical Laboratory Science       |                      |
|                        | Administration Seminar           | 2                    |
|                        | Electives                        | 6                    |

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**Total B.S. Degree 176**

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\*Students planning to enter graduate school should take 4 quarter hours of Analytical Chemistry and 6 quarter hours of Physics.

**MEDICAL LABORATORY SCIENCE—MEDICAL TECHNOLOGY****Bachelor of Science Degree or Associate in Science Degree****The Profession**

Medical Technology is a respected and important health profession. The medical technologist works as a professional in close association with pathologists, doctors, and hospital and medical laboratory personnel. Working in a variety of specialized fields such as bacteriology, blood-banking, histology, hematology, biochemistry, and nuclear and radiochemistry, the medical technologist makes important observations necessary for critical diagnosis by the doctor upon early detection and treatment of disease.

The Associate Degree Medical Laboratory Technician likewise is an important member of the health team. His responsibilities are commensurate with his background and he works in close association with medical technologists and pathologists.

The Registered Medical Technologist and the Associate Degree Medical Laboratory Technician are in constant demand in hospital laboratories, clinics, public health agencies, pharmaceutical firms, research foundations, and in the Armed Forces.

The baccalaureate program in Medical Technology (Medical Laboratory Science) is conducted in affiliation with several Hospital Schools of Medical Technology approved by the Council on Medical Education of the American Medical Association. The program leads to a Bachelor of Science degree, which is awarded by University College, and entitles the student to write the registry examination in Medical Technology MT (ASCP) given by the Board of Registry of Medical Technologists of the American Society of Clinical Pathologists.

Students who have appropriate clinical experience may apply to write the AD-MLT (ASCP), Associate Degree Medical Laboratory Technician Examination, upon completion of appropriate courses. University College students will be eligible for an Associate degree upon the completion of the courses indicated in the curriculum below and appropriate applied study.

The basic science and general education courses are offered evenings, but the professional courses are offered only full-time, days, in cooperation with the affiliated hospitals. Students planning to enter the professional courses are advised to consult the program coordinator prior to the Winter Quarter preceding entrance to the hospital program.

The Medical Laboratory Science Professional Courses, numbered in the 87.100 and 87.200 series, will be offered directly through the College of Pharmacy and Allied Health Professions. Students must regis-

ter as Special Students of that basic college and tuition will be the same as that charged for all basic college Medical Laboratory Science Professional Courses.

*Prerequisite:* Satisfactory completion of the Mathematics Placement Test or the Basic Mathematics I and II courses (10.330 and 10.331). The Mathematics Placement Test must be taken well in advance of the registration date.

#### FIRST YEAR

| Course Number             | Course                                   | quarter hours |
|---------------------------|--|---------------|
| 10.307, 10.308            | College Algebra & Trigonometry I, II     | 8             |
| 12.544, 12.545, 12.546    | General Chemistry I, II, III             | 6             |
| 12.547, 12.548, 12.549    | General Chemistry Lab. I, II, III        | 3             |
| 30.603 or 30.601 & 30.602 | Composition and Rhetoric I & II          | 4             |
| 87.100                    | Medical Laboratory Science Orient.       | 1             |
| 86.541, 86.542            | Medical Care and Current Social Problems | 4             |

#### SECOND YEAR

| Course Number            | Course                               | quarter hours |
|--------------------------|--------------------------------------|---------------|
| 18.511, 18.512, 12.513   | Biology I, II, III                   | 12            |
| 12.521, 12.522, 12.523   | Analytical Chemistry I, II, III      | 6             |
| 12.524, 12.525, 12.526   | Analytical Chemistry Lab. I, II, III | 6             |
| 30.604, 30.605 or 30.606 | Introduction to Literary Forms       | 4             |

#### THIRD YEAR

| Course Number          | Course                          | quarter hours |
|------------------------|---------------------------------|---------------|
| 18.524, 18.525, 18.526 | Human Anatomy and Physiology    | 9             |
| 19.501, 19.502, 19.503 | Psychology I, II, III           | 6             |
|                        | or                              |               |
| 22.501, 22.502, 22.503 | Principles of Political Science |               |
|                        | or                              |               |
|                        | Other Social Science Elective   |               |
| 86.502                 | Hospital Law and Ethics         | 2             |
| 18.521, 18.522         | Microbiology I, II              | 8             |

#### FOURTH YEAR

| Course Number  | Course   | quarter hours |
|----------------|--|---------------|
| 87.101         | Basic Medical Laboratory Science                     | 4             |
| 87.102, 87.103 | Basic Hematology; Basic Blood Banking                | 4             |
| 87.105         | Basic Medical Laboratory Chemistry & Instrumentation | 4             |
| 87.121         | Quality Control                                      | 2             |
|                | Modern Language                                      | 9             |
|                | or   |               |
|                | Other Humanities Electives                           |               |

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**Total A.S. Degree 102**

Associate degree requirement completed for students who have appropriate applied study, and have completed a minimum of 102 quarter hours of credit including those courses listed above.

**FIFTH YEAR**

| <b>Course Number</b>   | <b>Course</b>  | <b>quarter hours</b> |
|------------------------|--|----------------------|
| 39.501, 39.502, 39.503 | Economic Principles & Problems I, II, III<br>or<br>Other Social Science Elective | 6                    |
| 12.531, 12.532, 12.533 | Organic Chemistry I, II, III   | 6                    |
| 12.534, 12.535, 12.536 | Organic Chemistry Lab. I, II, III  | 6                    |
|                        | Electives (non-science)  | 6                    |

**SIXTH YEAR**

| <b>Course Number</b>   | <b>Course</b>   | <b>quarter hours</b> |
|------------------------|---|----------------------|
| 11.304, 11.305, 11.306 | General Physics, I, II, III                                       | 6                    |
| 18.557, 18.558, 18.556 | Genetics I, II, & Lab.<br>Elective                                | 6<br>3               |
| 29.501, 29.502, 29.503 | Effective Speaking<br>or<br>Other Speech or Communications course | 6                    |

**SEVENTH YEAR**

12 months internship at an affiliated AMA-Approved Hospital School of Medical Technology.

|                        |                                     |    |  |
|------------------------|-------------------------------------|----|--|
|                        | or                                  |    |  |
| 87.202                 | Hematology-Immunohematology         | 4  |  |
| 87.201                 | Pathogenic Microbiology             | 4  |  |
| 87.205                 | Clinical Chemistry                  | 4  |  |
| 87.203                 | Medical Immunology-Serology         | 2  |  |
| 87.204                 | Medical Parasitology                | 2  |  |
| 87.111, 87.112, 87.115 | Applied Studies (at hospital)       | 12 |  |
| 87.190                 | Undergraduate Research              | 2  |  |
| 87.221                 | Medical Laboratory Management<br>or |    |  |
| 87.226                 | Health Science Education            | 2  |  |

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**Total B.S. Degree 179**

Please see day school course descriptions for professional courses associated with the A.M.A. Hospital Approved Programs.

## MEDICAL LABORATORY SCIENCE—HEMATOLOGY

### Bachelor of Science Degree

#### The Profession

Hematology is a specialty in the broader field of medical laboratory science. Hematology technologists are employed in hospitals and clinical laboratories where they perform specific laboratory tests—including differential cell counts and bone marrow examinations and hemoglobin and hematocrit determinations—which aid in the diagnosis, treatment, and follow-up of infections, anemias, and leukemias. The hematology technologist also performs coagulation studies which aid the diagnosis and treatment of bleeding disorders and the treatment of patients on anticoagulant therapy. The modern hematology laboratory is well equipped with electronic instruments which the technologist must operate and maintain. Additional responsibilities include laboratory quality control and associated problem solving.

The current requirements for categorical certification in hematology are indicated by the Board of Registry of the American Society of Clinical Pathologists as follows:

A candidate for certification in hematology must meet at least one of the following requirements:

1. Certification in Medical Technology by the Board of Registry of the American Society of Clinical Pathologists, plus one year of satisfactory hematology experience in an acceptable laboratory within the three years immediately prior to application.
2. A baccalaureate degree in biological sciences or chemistry from a college or university accredited by a recognized regional accrediting agency plus two years of hematology experience in an acceptable laboratory.

Students should contact the American Society of Clinical Pathologists, Board of Registry, P.O. Box 4872, Chicago, Illinois 60680, for details concerning their eligibility to write the hematology examination.

The curriculum in hematology does not incorporate a clinical or applied study component, but is primarily designed for one who works in this field, giving him the opportunity to earn a baccalaureate degree with a concentration in his area of interest.

The Medical Laboratory Science Professional Courses, numbered in the 87.100 and 87.200 series, will be offered directly through the College of Pharmacy and Allied Health Professions. Students must register as Special Students of that basic college and tuition will be the same as that charged for all basic college Medical Laboratory Science Professional Courses.

**FIRST YEAR**

| <b>Course Number</b>   | <b>Course</b>                          | <b>quarter hours</b> |
|------------------------|--|----------------------|
| 10.307, 10.308         | College Algebra & Trigonometry I, II   | 8                    |
| 12.544, 12.545, 12.546 | General Chemistry I, II, III           | 6                    |
| 12.547, 12.548, 12.549 | General Chemistry Lab. I, II, II       | 3                    |
| 30.603                 | Composition & Rhetoric I & II          | 4                    |
| 30.606                 | Introduction to Literary Forms         | 4                    |
| 87.100                 | Medical Laboratory Science Orientation | 1                    |

**SECOND YEAR**

| <b>Course Number</b>     | <b>Course</b>                                   | <b>quarter hours</b> |
|--------------------------|---|----------------------|
| 18.511, 18.512, 18.513   | Biology I, II, III                              | 12                   |
|                          | Humanities Elective                             | 6                    |
| **12.531, 12.532, 12.533 | Analytical Chemistry I, II, III and } or equiv. | 6                    |
| 12.524, 12.525, 12.526   | Analytical Chemistry Lab. I, II, III }          | 6                    |

**THIRD YEAR**

|                        |  |   |
|------------------------|--|---|
| 87.101                 | Basic Medical Laboratory Science                       | 4 |
| 87.102 *87.103         | Basic Hematology; Basic Blood Banking                  |   |
| 87.103                 | or Elective  | 4 |
| 87.105                 | Basic Medical Laboratory Chemistry and Instrumentation | 4 |
| 87.121                 | Quality Control  | 2 |
| 18.557, 18.558, 18.559 | Genetics   | 6 |

**FOURTH YEAR**

|                        |   |   |
|------------------------|---|---|
| 18.524, 18.525, 18.526 | Human Anatomy and Physiology I, II, III | 9 |
|                        | Social Science Elective                 | 6 |
| 18.521, 18.522, 18.523 | Microbiology I, II or                   | 8 |
|                        | Med. Microbiology (4) and Elective (4)  | 8 |

**FIFTH YEAR**

|                        |                                   |   |
|------------------------|-----------------------------------|---|
| 86.502                 | Hospital Law and Ethics           | 2 |
| 87.542, 87.543         | Morphologic Hematology I, II      | 4 |
| 12.531, 12.532, 12.533 | Organic Chemistry I, II, III      | 6 |
| 12.534, 12.535, 12.536 | Organic Chemistry Lab. I, II, III | 6 |
|                        | Social Science Elective           | 6 |

**SIXTH OR SEVENTH YEAR**

|                          |  |   |
|--------------------------|--|---|
| **11.304, 11.305, 11.306 | General Physics I, II, III or Elective | 6 |
| 87.211                   | Coagulation                            | 3 |
| 87.213                   | Immunohematology                       | 2 |
| 87.222                   | Histochemistry                         | 3 |
| 18.531, 18.532, 18.533   | Cell Biology I, II, III                | 6 |
|                          | Humanities Elective                    | 6 |

\*Students with extensive laboratory experience in a hematology laboratory, may be exempt from these courses.

\*\*An. Chem. and Physics recommended for students applying to graduate school.



**SIXTH OR SEVENTH YEAR**

|                          |                                      |            |
|--------------------------|--------------------------------------|------------|
| 86.574, 86.575           | Health, Disease, & Disability or     | 4          |
|                          | Instrumentation or Electronics       | 6          |
|                          | Elective                             | 6          |
| 87.203                   | Med. Immunology-Serology (Intensive) | 2          |
| 87.204                   | Hem. Parasitology                    | 2          |
| 87.190                   | Undergrad Research                   | 2          |
| 87.547                   | Med. Lab. Science Educ. Sem.         | 2          |
| 87.546                   | Ed. or Adm. Health Science Elective  | 6          |
|                          |                                      | <hr/>      |
| <b>Total B.S. Degree</b> |                                      | <b>175</b> |

**Note:** Strongly recommended electives are: Psychology, Economics

**RADIOLOGIC TECHNOLOGY****Associate in Science Degree**

The program in Radiologic Technology is a joint offering of the University and several area hospitals. The classroom experiences are provided by the University, and the laboratory practicum is conducted at approved Hospital Schools of Radiologic Technology. These are accredited by the Council on Medical Education of the American Medical Association. The Committee on Radiologic Technology Education of the Massachusetts Radiological Society and the Massachusetts Society of Radiologic Technologists serve in advisory capacities concerning curriculum content.

The Radiologic Technologist is a respected member of the allied health team in the diagnostic and therapeutic environment of the clinic or hospital, and an important functionary in the production, quality control, and inspection laboratories of the industrial community. Medically related responsibilities demand effective rapport with internists, surgeons, pathologists, nurses, and laboratory personnel while industrial competency requires close association with metallurgists, production and manufacturing specialists, engineers, and scientists.

*Prerequisite:* Satisfactory completion of the Mathematics Placement Test or the Basic Mathematics I and II courses (10.330 and 10.331) and acceptance of an A. M. A. accredited School of Radiologic Technology which is affiliated with Northeastern University.

Have an interview with the Radiological Technology Program Director, 437-2818, 2819.

Be accepted to the affiliated hospital through an interview with the Radiologist.

**FIRST YEAR**

All students begin the program in July. During the first 12 weeks, students spend two days at Northeastern University and three days at the affiliated hospital doing a clinical practicum. This is followed by two alternating twelve-week terms of full-time didactic study at Northeastern University and two twelve-week terms of full-time radiologic practicum and seminars at the affiliated Hospital Schools.

*Didactics — 24 weeks (at Northeastern University)*

| Course Number  | Course                                     | quarter hours |
|----------------|--|---------------|
| 10.391, 10.392 | Mathematics A, B                           | 6             |
| 18.570, 18.571 | Gross Anatomy and General Physiology I, II | 6             |

(Continued on following page.)

|  |        |   |    |
|--|--------|---|----|
| 86.620,  | 86.621 | Radiologic Technology Orientation I, II | 4  |
| 86.622,  | 86.623 | Radiological Science I, II              | 8  |
| 86.624,  | 86.625 | Principles of Radiology I, II           | 8  |
| 86.626,  | 86.627 | Radiologic Photography & Exposure I, II | 8  |
| <i>Practicum — 28 weeks (at Hospital Schools of Radiologic Technology)</i> |        |   |    |
|  | 86.647 | Radiology Practicum                     | 12 |

## SECOND YEAR

Full-time attendance at the affiliated Hospital Schools of Radiologic Technology (52 wks @ 40 hrs/wk = 2080 hrs).

Students who satisfactorily complete the first and second year of didactics and practicum are eligible to take the American Radiologic Technology examination for certification as a Radiologic Technician (R.T.).

## THIRD YEAR

Three Quarters (36 weeks) part-time evening study at University College.\*

| Course Number          | Course                                | quarter hours |
|------------------------|---------------------------------------|---------------|
| 18.511, 18.512, 18.513 | Biology I, II, III                    | 12            |
| 30.601, 30.602         | Composition & Rhetoric I, II          | 4             |
|                        | English Elective                      | 2             |
| 86.614, 86.615, 86.616 | Adv. Radiologic Technology I, II, III | 6             |

## FOURTH YEAR

|                          |   |   |
|--------------------------|---|---|
| 19.501, 19.502, 19.503   | Psychology I, II, III or                  |   |
| 21.501, 21.502, 21.503** | Sociology I, II, III                      | 6 |
| 45.501, 45.502, 45.503   | Management & Organization I, II, III      | 6 |
| 86.617, 86.618, 86.619   | Radioactive Isotopes & Therapy I, II, III | 6 |
|                          | Humanities Elective I, II, III            | 6 |

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**Total A.S. degree 100**

Qualified students may accelerate completion of the program by enrolling in third or fourth year evening courses during the second internship year upon petition for approval by the Director of Radiologic Technology in University College or the Radiologist in charge of the Hospital School of Radiologic Technology involved.

\*These courses may now be completed on a full-time day basis, enabling the students to complete the above program in 27 months. For details please contact the Radiological Technology Program Director, 437-2818.

\*\*21.601, 21.602 Principles of Sociology I, II (8 q.h.) may be substituted for 21.501, 21.502, 21.503 Sociology I, II, III (6 q.h.).

# education

## GENERAL OBJECTIVES

The teacher education program in University College is deeply concerned with the quality of those who teach. In the paragraphs that follow, quality is generally described and the several ways of assessing it are outlined.

**Objective I:** *Every teacher should be broadly educated.*

All students are expected to develop breadth in their program in two ways. First, students will be required to complete certain common course work: social science, United States history, American literature, effective speaking, human development, and English. Second, all students must complete a minimum of 16 credits in each of the following areas: science and mathematics, humanities, and social sciences.

**Objective II:** *Every teacher should achieve an expertness in some field of knowledge.*

The Teacher Education Program in University College offers an academic major in the field of English. The major is designed to prepare English teachers for the junior or senior high school. It will also provide a basis for specialized graduate study in English as well as in education.

**Objective III:** *Each teacher should be professionally prepared for the position of his choice.*

In addition to their general education and specialized concentration, all students will share some common professional course work with related out-of-class experience and, in addition, will take course work appropriate to their level or field of teaching. Student teaching during the senior year will serve as an opportunity to apply what has been learned in the previous years. Beginning students will have about two years to estimate their abilities to master college work, to discover the wisdom of their choice of a major field, and to evaluate the strength of their commitment to, and qualifications for, teaching.

## **Admission Requirements**

Important to the future teacher is strong ability in the communication skills and adequate strength in the field of special interest. As important as the pattern and quality of an applicant's preparation are the personal qualifications which contribute to success in teaching.

Upon completion of all courses (or their equivalent) listed under Quarters 1-6 on p. 157, students desiring certification must apply to the College of Education\* for admission to the professional sequence of the teacher education program. They will be expected to present such evidence as the College of Education shall require. Evaluations will be made on academic aptitude, verbal fluency, interest in working with young people, and emotional maturity. A serious attempt will be made to assess these factors in their interrelationships rather than as isolated phenomena. Students accepted into the professional sequence of the College of Education will be expected to commit themselves to the remaining requirements of the program.

## **Transfers**

Students admitted to advanced standing in University College (see p. 34) may apply for admission to the professional sequence on the basis of satisfactory grades received in courses which are the equivalent of those required for entering Quarter 7 (see p. 157). Credit toward electives may be earned by means of the College Level Examination Program (see p. 35).

## **GRADUATION REQUIREMENTS**

### *Degrees*

University College will award the degree of Bachelor of Science to those who successfully complete the program of preparation for teaching English at the secondary school level.

### *Quantitative Requirements*

The required courses in the curriculum for the teaching of English are listed on a following page. The curriculum requires not less than 173 quarter hours of class work, including one quarter of student teaching. At least 45 quarter hours will be required in education, including student teaching.

### *Elective Courses*

Elective courses, approved by the College of Education adviser, will be selected by the student from among courses in University College,

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\*One of the Basic (day) Colleges of Northeastern University

or credit may be earned by means of the College Level Examination Program.

### *Qualitative Requirements*

Students in the Teacher Education Program in University College will be expected to maintain an overall average of C while doing work of C+ or better in the field of specialization and in the professional sequence in order to be recommended for placement. Students are warned that any failure seriously handicaps their records and must be made up at the earliest opportunity.

### *Graduation with Honor*

Candidates of distinctly superior achievement in their academic work will be graduated with honor. Upon special vote of the faculty a limited number of this group may be graduated with high honor or with highest honor. Students must have been in attendance at the University at least six quarters before they may become eligible for honors at graduation.

### **National Teacher Examinations**

All students who plan to make teaching their career will be expected to take the general and special National Teacher Examinations in their senior year.

### **Programs of Instruction**

The teacher education program in University College offers an academic major in the field of English (in grades 7-12). A specimen program is shown on the following page.

### **Accreditation**

Northeastern University's College of Education is accredited by the National Council for Accreditation of Teacher Education. The College is a member of the American Association of Colleges for Teacher Education.

**SPECIMEN PROGRAM IN TEACHING OF ENGLISH (GRADES 7-12)**

*This program is designed with the assumption that the student is attending college on approximately a half-time basis.*

**First Year****QUARTER 1**

| No.    | Course           | Cl. | q.h. |
|--------|------------------|-----|------|
| 16.501 | Nat. Sci. I      | 2   | 2    |
| 23.501 | West. Civ. I     | 2   | 2    |
| 29.501 | Eff. Spkg. I     | 2   | 2    |
| 30.601 | Comp. & Rhet. I* | 2   | 2    |

**QUARTER 2**

| No.    | Course           | Cl. | q.h. |
|--------|------------------|-----|------|
| 16.502 | Nat. Sci. II     | 2   | 2    |
| 23.502 | West. Civ. II    | 2   | 2    |
| 29.502 | Eff. Spkg. II    | 2   | 2    |
| 30.602 | Comp. & Rhet. II | 2   | 2    |

**QUARTER 3**

| No.    | Course                 | Cl. | q.h. |
|--------|------------------------|-----|------|
| 16.503 | Nat. Sci. III          | 2   | 2    |
| 23.503 | West. Civ. III         | 2   | 2    |
| 29.503 | Eff. Spkg. III         | 2   | 2    |
| 30.604 | Intro. to Lit. Forms I | 2   | 2    |

**Second Year****QUARTER 4**

| No.    | Course                  | Cl. | q.h. |
|--------|-------------------------|-----|------|
| 22.501 | Prin. Pol. Sci. I       | 2   | 2    |
| 30.605 | Intro. to Lit. Forms II | 2   | 2    |
| 50.111 | Soc. Sci. I             | 3   | 3    |

**QUARTER 5**

| No.    | Course             | Cl. | q.h. |
|--------|--------------------|-----|------|
| 22.502 | Prin. Pol. Sci. II | 2   | 2    |
|        | English Elective   | 2   | 2    |
| 50.112 | Soc. Sci. III      | 3   | 3    |

**QUARTER 6**

| No.    | Course              | Cl. | q.h. |
|--------|---------------------|-----|------|
| 22.503 | Prin. Pol. Sci. III | 2   | 2    |
|        | English Elective    | 2   | 2    |
| 50.113 | Soc. Sci. III       | 3   | 3    |

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 24

21

**Total Credits****45**

*Students desiring certification must now apply to the College of Education\*\* for admission to the teacher education program.*

**Third Year****QUARTER 7**

| No.    | Course              | Cl. | q.h. |
|--------|---------------------|-----|------|
| 23.527 | England 500-1603    | 2   | 2    |
| 26.501 | Intro. Phil. I      | 2   | 2    |
| 30.525 | English Language I  | 2   | 2    |
| 39.501 | Ec. Prin. & Prob. I | 2   | 2    |

**QUARTER 8**

| No.    | Course               | Cl. | q.h. |
|--------|----------------------|-----|------|
| 23.548 | England 1603-1815    | 2   | 2    |
| 26.502 | Intro. Phil. II      | 2   | 2    |
| 30.526 | English Language II  | 2   | 2    |
| 39.502 | Ec. Prin. & Prob. II | 2   | 2    |

**Fourth Year****QUARTER 10**

| No.    | Course               | Cl. | q.h. |
|--------|----------------------|-----|------|
| 23.504 | U.S. History I       | 2   | 2    |
| 30.541 | English Lit. I       | 2   | 2    |
| 50.121 | Hum. Dev. & Learn. I | 4   | 4    |

**QUARTER 11**

| No.    | Course          | Cl. | q.h. |
|--------|-----------------|-----|------|
| 23.505 | U.S. History II | 2   | 2    |
| 26.534 | Logic           | 2   | 2    |
| 30.542 | English Lit. II | 2   | 2    |
|        | Electives       | 2   | 2    |

\*An English placement examination must be taken. If the score is not satisfactory, students should enroll for 30.600 Elements of Composition, a 2 q.h. credit course designed to improve command of written English. Then proceed with 30.601, 602, 603, 604 and a 2 q.h. English elective in Quarter 6.

\*\*One of the Basic (day) Colleges of Northeastern University

**QUARTER 9**

| No.    | Course                | Cl. | q.h. |
|--------|-----------------------|-----|------|
| 23.549 | England Since 1815    | 2   | 2    |
| 26.503 | Intro. Phil. III      | 2   | 2    |
| 30.527 | English Language III  | 2   | 2    |
| 39.503 | Ec. Prin. & Prob. III | 2   | 2    |

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24**Fifth Year****QUARTER 13**

| No.    | Course                      | Cl. | q.h. |
|--------|-----------------------------|-----|------|
| 30.522 | Intro. Semantics I          | 2   | 2    |
| 30.544 | Amer. Lit. I                | 2   | 2    |
| 51.135 | Anal. Tchng. &<br>Ed. Proc. | 4   | 4    |

**QUARTER 14**

| No.    | Course              | Cl. | q.h. |
|--------|---------------------|-----|------|
| 30.523 | Intro. Semantics II | 2   | 2    |
| 30.545 | Amer. Lit. II       | 2   | 2    |
|        | Electives           | 4   | 4    |

**QUARTER 15**

| No.    | Course         | Cl. | q.h. |
|--------|----------------|-----|------|
|        | Elective       | 2   | 2    |
| 30.546 | Amer. Lit. III | 2   | 2    |
| 54.126 | Sec. Reading   | 4   | 4    |

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24**Seventh Year****QUARTER 19**

| No.    | Course              | Cl. | q.h. |
|--------|---------------------|-----|------|
|        | Sci. or Math. Elec. | 2   | 2    |
|        | Art Music or Thea.  |     |      |
|        | Arts                | 2   | 2    |
| 50.151 | Bckgrnds. Amer. Ed. | 4   | 4    |

**QUARTER 20**

| No. | Course              | Cl. | q.h. |
|-----|---------------------|-----|------|
|     | Sci. or Math. Elec. | 2   | 2    |
|     | Art Music or Thea.  |     |      |
|     | Arts                | 2   | 2    |
|     | Electives           | 4   | 4    |

**QUARTER 21**

| No.    | Course              | Cl. | q.h. |
|--------|---------------------|-----|------|
|        | Sci. or Math. Elec. | 2   | 2    |
|        | Art Music or Thea.  |     |      |
|        | Arts                | 2   | 2    |
| 50.143 | M&M—English         | 4   | 4    |

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24**QUARTER 12**

| No.    | Course                   | Cl. | q.h. |
|--------|--------------------------|-----|------|
| 23.506 | U.S. History III         | 2   | 2    |
| 30.543 | English Lit. III         | 2   | 2    |
| 50.131 | Hum. Dev. &<br>Learn. II | 4   | 4    |

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24**Sixth Year****QUARTER 16**

| No.    | Course          | Cl. | q.h. |
|--------|-----------------|-----|------|
| 30.517 | Intermed. Wrtg. | 2   | 2    |
| 30.554 | Shakespeare I   | 2   | 2    |
| 50.141 | Meas. & Eval.   | 4   | 4    |

**QUARTER 17**

| No.    | Course           | Cl. | q.h. |
|--------|------------------|-----|------|
| 30.518 | Creative Wrtg. I | 2   | 2    |
| 30.555 | Shakespeare II   | 2   | 2    |
|        | Electives        | 4   | 4    |

**QUARTER 18**

| No.    | Course            | Cl. | q.h. |
|--------|-------------------|-----|------|
| 30.519 | Creative Wrtg. II | 2   | 2    |
| 30.556 | Shakespeare III   | 2   | 2    |
|        | Electives         | 4   | 4    |

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24**Eighth Year****QUARTER 22**

| No.    | Course           | Cl. | q.h. |
|--------|------------------|-----|------|
| 51.151 | Student Teaching | 8   |      |

8

**Total Credits**

173



# therapeutic recreation services

for Nursing Home Activity Directors

**Prof. Frank Robinson**, Consultant  
Therapeutic Recreation Services  
Telephone 437-3157

A certification and degree program for nursing home activity directors and others is offered by University College. The program is designed to meet the needs of directors of activity in the Commonwealth's nursing homes and the needs of others entering this occupational field in the future.

The part-time program, leading to certification and an Associate degree, will be taught by the distinguished faculty of Northeastern University's Boston-Bouvé College. Courses offered will be in the areas of therapeutic recreation services, the process of aging, arts and crafts, social recreation, geriatric care, utilization of resources, and many other professional courses.

## CURRICULUM

- I. Certification—25 quarter hours
  - Professional courses
- II. Associate Degree—96 quarter hours
  - Psychology 2 q.h.
  - Social Sciences 8 q.h.
  - Fine Arts 3 q.h.
  - Speech & Theatre Arts 4 q.h.
  - English 2 q.h.
  - Health Care Science 8 q.h.
  - Professional 51 q.h.
  - Electives 18 q.h.

**THERAPEUTIC RECREATION SERVICES****Associate in Science Degree****Required Courses (Liberal Arts)**

|                        |                              | quarter hours |           |
|------------------------|------------------------------|---------------|-----------|
| 19.501                 | Psychology I                 | 2             |           |
| 21.501, 21.502, 21.503 | Sociology I, II, III         | 6             |           |
| 21.563                 | Social Gerontology           | 2             |           |
| 27.541                 | Drawing I                    | 3             |           |
| 29.501                 | Effective Speaking I         | 2             |           |
| 29.511                 | Introduction to Theatre Arts | 2             |           |
| 30.601                 | Composition and Rhetoric I   | 2             | <b>19</b> |

**Required Courses (Health Care Services)**

|                        |  |   |          |
|------------------------|--|---|----------|
| 86.571, 86.572, 86.573 | Long-Term Care Administration I, II, III | 6 |          |
| 86.577                 | Geriatric Care I                         | 2 | <b>8</b> |

**Required Courses (Therapeutic Recreation Services)**

A.S. degree candidates must complete 51 quarter hours of credit, selected from the professional courses listed below.

*Note:* Twenty-five (25) quarter hours of credit in the following professional courses will qualify a student for certification by Boston-Bouv  College:

|                |   |   |  |
|----------------|---|---|--|
| 63.501         | Introduction to Therapeutic Recreation Services               | 2 |  |
| 63.505         | The Nursing Home Experience                                   | 2 |  |
| 63.510         | Philosophy of Recreation and Leisure                          | 2 |  |
| 63.521         | Recreation Skills I (Social Recreation)                       | 2 |  |
| 63.522         | Recreation Skills II (Music Therapy)                          | 2 |  |
| 63.523         | Recreation Skills III (Guitar or Auto Harp)                   | 2 |  |
| 63.524         | Recreation Skills IV (Intermediate Guitar)                    | 2 |  |
| 63.531         | Techniques of Recreation Leadership                           | 2 |  |
| 63.532         | Interagency Planning for Community Action                     | 2 |  |
| 63.535         | Recreation Skills VI (Special Events and Programs)            | 2 |  |
| 63.540, 63.541 | Analysis of Movement as Applied to Recreation I, II           | 4 |  |
| 63.547         | Outdoor Education for Handicapped                             | 2 |  |
| 63.549         | The Process of Aging  | 2 |  |
| 63.550, 63.551 | Group Dynamics I, II  | 4 |  |
| 63.552         | Leadership and Program for III, Aged, and Infirm              | 2 |  |
| 63.553         | Techniques and Resources in Working with Elderly              | 2 |  |
| 63.555         | Therapeutic Recreation for Special Groups                     | 2 |  |
| 63.556         | Workshop in Adapted Hospital Recreation                       | 2 |  |
| 63.557         | Recreation Activities of Atypical Individuals and Groups      | 2 |  |
| 63.559         | Group Dynamics (Intensive)                                    | 4 |  |
| 63.560         | Development and Utilization of Recreation Education Resources | 2 |  |

(Continued on following page.)

|                          |   |   |          |
|--------------------------|---|---|----------|
| 63.565, 63.566           | Social and Psychological Impacts<br>of Disabilities I, II       | 4 |          |
| 63.567                   | Social and Psychological Impacts of<br>Disabilities (Intensive) | 4 |          |
| 63.570, 63.571, 63.572   | Arts and Crafts I, II, III                                      | 6 |          |
| 63.573                   | Arts and Crafts (Intensive)                                     | 4 |          |
| 63.592                   | Independent Study   | 3 |          |
| 63.593                   | Independent Study   | 4 |          |
| 63.600                   | Seminar in Group Dynamics                                       | 2 | 51       |
| <b>Elective Courses*</b> |   |   | <hr/> 18 |
| <b>Total Credits</b>     |   |   | <hr/> 96 |

\*While students may elect courses in their major field in excess of the minimum number required, they are encouraged to elect courses from any other curricula in the University College Catalog.

# course descriptions

*Not all the courses listed in this bulletin will be offered. A final list of those classes to be offered will be contained in the University College Schedule of Courses, which gives the hours, days, and location of classes. This schedule is issued prior to the Fall, Winter, Spring, and Summer Quarters.*

## Abbreviations

Q.H. = Quarter Hours (credit earned)

Cl. = Hours required in class per week

Prereq. = Prerequisite

## 10—MATHEMATICS (Lincoln College)

Students intending to enroll in Mathematics 10.327 or 10.335 will be given a Mathematics Placement Test during the registration period. A satisfactory score on this test will entitle the student to enroll in course 10.327 or 10.335, while an unsatisfactory score will require that he enroll in the non-credit course 10.330 for additional preparation.

### 10.301 Introduction to Mathematics I (4 cl., non-credit)

A comprehensive review of high school algebra including: first degree equations, factoring, fractions, fractional equations, ratio and proportion, word problems, and concepts of plane geometry. *Prereq. none.*

### 10.302 Introduction to Mathematics II (4 cl., non-credit)

Algebraic operations with complex fractions, mixed expressions, proportions, square roots, radicals, quadratic equations, simultaneous equations, graphs, and fractional zero and negative exponents. The geometry of the right triangle, areas of polygons and circles, and loci problems. Basic slide rule operation. *Prereq. 10.301.*

### 10.303 Introduction to Mathematics (3 cl., non-credit)

An accelerated combination of 10.301 and 10.302. (Day Curriculum.)

### 10.307 College Algebra and Trigonometry I (4 cl., 4 q.h.)

Fundamental algebraic operations; complex numbers; radicals and exponents; functions; linear and quadratic equations; irrational equations; inequalities; variations; roots of polynomial equations. *Prereq. Math. Placement Test or 10.302.*

### 10.308 College Algebra and Trigonometry II (4 cl., 4 q.h.)

Logarithms; trigonometric functions of angles in degrees and radians; trigo-

nometric identities and equations; right triangles; oblique triangles; complex numbers in trigonometric form; systems of equations; determinants. *Prereq.* 10.307.

**10.316 Probability and Statistics I** (2 cl., 2 q.h.)

Basic tools, e.g., sets, permutations and combinations; probability and applications. *Prereq.* 10.308 or 10.329 or 10.335.

**10.317 Probability and Statistics II** (2 cl., 2 q.h.)

Descriptive statistics, frequency distributions and probability density functions, normal and other distributions. *Prereq.* 10.316.

**10.318 Probability and Statistics III** (2 cl., 2 q.h.)

Bivariate distributions, correlation, statistical inference, and estimation regression. *Prereq.* 10.317.

**10.320 Calculus I** (4 cl., 4 q.h.)

Plane analytic geometry. Differentiation of algebraic functions. Rate, motion, maximum and minimum problems. Derivatives of higher order. Curve sketching. Basics in functions, limits, and continuity. *Prereq.* 10.308 or 10.329.

**10.321 Calculus II** (2 cl., 2 q.h.)

Integration of algebraic functions. Integration and differentiation of logarithmic, exponential, and trigonometric terms. Calculations of areas, volumes, and length of arc by definite integrals. *Prereq.* 10.320.

**10.322 Calculus III** (2 cl., 2 q.h.)

Differentiation and integration of inverse trigonometric functions. Integration by parts, substitution, and tables. The Trapezoidal and Simpson Rules. The application of the differential and integral calculus to the Polar Coordinate System. Indeterminate forms. *Prereq.* 10.321.

**10.323 Calculus IV** (2 cl., 2 q.h.)

Vectors in the plane, vectors in three-dimensional space. Functions of more than one variable. Partial differentiation. Multiple integration. Infinite series. Taylor's and Maclaurin's Formula. *Prereq.* 10.322.

**10.324 Differential Equations I** (2 cl., 2 q.h.)

Vector analysis; matrices and linear algebra. *Prereq.* 10.323.

**10.325 Differential Equations II** (2 cl., 2 q.h.)

Ordinary differential equations — standard types of the first order; linear differential equations, especially with constant coefficients. Variation of parameters. *Prereq.* 10.324.

**10.326 Differential Equations III** (2 cl., 2 q.h.)

Series solutions of differential equations; Laplace transforms; Fourier series and orthogonal functions. *Prereq.* 10.325.

**10.327 Mathematics I** (2 cl., 2 q.h.)

Methods and applications of algebra, graphical techniques. *Prereq.* *Math. Placement Test*, 10.331 or 10.302.

**10.328 Mathematics II** (2 cl., 2 q.h.)

Linear and quadratic equations, exponents and radicals, variation. *Prereq.* 10.327.

**10.329 Mathematics III** (2 cl., 2 q.h.)

Introductory topics of probability and statistics; logarithms and applications; mathematics of finance. *Prereq.* 10.328.

**10.330 Basic Mathematics I** (2 cl., non-credit)

A review of elementary algebra; algebraic expressions and operations, equations, word problems. *Prereq.* none.

**10.331 Basic Mathematics II** (2 cl., non-credit)

Further review; operations with polynomials, factoring, fractional expressions, word problems. *Prereq.* 10.330.

**10.332 Mathematics for Business Management I** (2 cl., 2 q.h.)

Topics of mathematics applicable to business management. Logic; set theory; probability and its uses in decision making under uncertainty. *Prereq.* 10.329 or equiv.

**10.333 Mathematics for Business Management II** (2 cl., 2 q.h.)

Statistical methods; mathematics of finance; introduction to vector and matrix algebra. *Prereq.* 10.332 or equiv.

**10.334 Mathematics for Business Management III** (2 cl., 2 q.h.)

Linear programming and optimization techniques; applications of matrix algebra; game theory. *Prereq.* 10.333 or equiv.

**10.351 Advanced Mathematics I (Numerical Analysis)** (2 cl., 2 q.h.)

Basic methods of numerical analysis — roots by iteration; approximating polynomials and interpolation; least squares fitting; numerical integration; approximate solution of ordinary differential equations — problems employing the electronic computer. *Prereq.* 09.353 and 10.326.

**10.352 Advanced Mathematics II** (2 cl., 2 q.h.)

Introduction to partial differential equations, boundary-value problems, Sturm-Liouville systems. *Prereq.* 10.351.

**10.353 Advanced Mathematics III** (2 cl., 2 q.h.)

Special topics in analysis. *Prereq.* 10.352.

**10.361 Modern Algebra I** (2 cl., 2 q.h.)

Sets; binary operations; mappings; rings, integers, fields; rationals; reals, bases for computer applications; Euclidean algorithm; primes. *Prereq.* 10.308, 10.329, or 10.335.

**10.362 Modern Algebra II** (2 cl., 2 q.h.)

Field of complex number; groups; subgroups; polynomial rings; homomorphisms; isomorphisms; ideals. *Prereq.* 10.361.

**10.363 Modern Algebra III** (2 cl., 2 q.h.)

Vector spaces; linear transformations; dependence, independence; dimension applications to engineering, science, and business. *Prereq.* 10.362.

**10.364 Modern Applied Algebra** (4 cl., 4 q.h.)

Introduce the language of abstract algebra to the following topics: graphs, finite state machines, programming languages, Boolean Algebra, lattices, coding for communication channels, and radar. Look at algebraic theory of linear systems. *Prereq.* 10.361, 10.362 and 10.363.

**10.401 Foundations of Mathematics I** (2 cl., 2 q.h.)

(See General Interest Courses, pages 159-161.)

**10.402 Foundations of Mathematics II** (2 cl., 2 q.h.)

(See General Interest Courses, pages 159-161.)

**10.403 Foundations of Mathematics III** (2 cl., 2 q.h.)

(See General Interest Courses, pages 159-161.)

**10.421 Calculus — A** (4 cl., 4 q.h.)

Applications of derivatives to curve-sketching; antidifferentiation; the definite integral, with applications; calculus of non-algebraic functions — logarithmic, exponential, and trigonometric. Calculus of inverse trigonometric functions; techniques of integration; polar coordinates; the conic sections; vectors in a plane; indeterminate forms, L'Hospital's Rule. *Prereq.* 10.320.

**10.422 Calculus — B** (3 cl., 4 q.h.)

Calculus of functions of several variables, partial differentiation, multiple integrals, infinite series. Vector analysis; matrices and linear algebra. *Prereq.* 10.421.

**10.423 Differential Equations** (4 cl., 4 q.h.)

Ordinary differential equations — standard types of the first order; linear differential equations, especially with constant coefficients; Laplace transforms, series solutions of differential equations. Fourier series and orthogonal functions. *Prereq.* 10.422.

## 11—PHYSICS (Lincoln College)

**11.301 Introductory Physics I** (4 cl., non-credit)

A survey of physical principles and theories related to field of mechanics. Emphasis is placed upon the solution of applied problems. *Prereq.* None.

**11.302 Introductory Physics II** (4 cl., non-credit)

Extension of principles in mechanics and introduction of concepts in heat, sound, light, electricity, and magnetism. *Prereq.* 11.301.

**11.304 General Physics I** (2 cl., 2 q.h.)

Survey of Newtonian mechanics; kinematics and dynamics of particle motion; projectile and circular motion; rotational motion; conservation laws of energy and momentum. *Prereq.* 10.501 or concurrently.

**11.305 General Physics II** (2 cl., 2 q.h.)

Temperature; heat energy; mechanical equivalent of heat; wave motion; sound; Doppler's effect; properties of light; simple optical systems. *Prereq.* 11.304.

**11.306 General Physics III** (2 cl., 2 q.h.)

Fundamentals of electricity and magnetism; fields; potential; electric current; inductance; capacitance; electromagnetism; a-c and d-c series circuits. *Prereq.* 11.305.

**12—CHEMISTRY**

*Consultant:* Prof. K. Weiss, Chairman, Chemistry Dept. (L.A. College)

*Course Coordinator:* Prof. F. Boig, (L.A. College)

**12.501 Introductory Chemistry I** (4 cl., non-credit)

A non-mathematical approach to the concepts of chemistry including matter, elements, and compounds, chemical bonding, chemical equations. *Prereq.* None.

**12.502 Introductory Chemistry II** (4 cl., non-credit)

A continuation of 12.501, including periodic system, forms of energy, oxidation reduction, solutions, chemical and ionic equilibrium, nuclear reactions, and a brief introduction to organic chemistry. *Prereq.* 12.501 or *equiv.*

**12.507 Modern Chemistry I** (Intro. to Inorganic Chemistry) (2 cl., 2 q.h.)

Fundamental ideas of matter and energy, chemical bonding, chemical energy, water and solutions, colloids, ionic reactions, oxidation and reduction, acidity, radioactivity; all discussed from the viewpoint of recent developments.

**12.508 Modern Chemistry II** (Intro. to Organic Chemistry), (2 cl., 2 q.h.)

Classes of organic compounds, including hydrocarbons, alcohols, ethers, aldehydes, ketones, carboxylic acids, esters, amines and amides, carbohydrates; including their relationships with modern biology. *Prereq.* 12.507 or *equiv.*

**12.509 Modern Chemistry III** (Intro. to the Chemistry of Living Bodies) (2 cl., 2 q.h.)

Includes fats, proteins, enzymes, chemistry of digestion, and the chemical reactions characteristic of body fluids. *Prereq.* 12.508 or *equiv.*

**12.515 Biochemistry I** (2 cl., 2 q.h.)

The first quarter of a three-quarter course sequence. The sequence will cover introduction to the biochemistry of the cell, including the occurrence, chemistry, and metabolism of carbohydrates, lipids, proteins, and nucleic acids. *Prereq.* 12.533 or *equiv.*

**12.516 Biochemistry II** (2 cl., 2 q.h.)

Continuation of Biochemistry I. *Prereq.* 12.515 or *equiv.*

**12.517 Biochemistry III** (2 cl., 2 q.h.)

Continuation of Biochemistry II. *Prereq.* 12.516 or *equiv.*



**12.518 Modern Chemistry Laboratory 1** (2 lab, 1 q.h.)

Coordinated with the lecture course, Modern Chemistry I, and deals with the preparation, properties, and reactions of substances discussed. *Prereq.* 12.507 *taken concurrently.* (Laboratory fee)

**12.519 Modern Chemistry Laboratory II** (2 lab, 1 q.h.)

Coordinated with the lecture course, Modern Chemistry II, and deals with the preparation, properties, and reactions of substances discussed. *Prereq.* 12.518 *(or 12.508 taken concurrently).* (Laboratory fee)

**12.520 Modern Chemistry Laboratory III** (2 lab, 1 q.h.)

Coordinated with the lecture course, Modern Chemistry III. *Prereq.* 12.519 *(or 12.509 taken concurrently).* (Laboratory fee)

**12.521 Analytical Chemistry I** (2 cl., 2 q.h.)

Analytical procedures and techniques. The principles of solution chemistry, ionic equilibria, and oxidation potentials applied to solving problems in chemical analysis. *Prereq.* 12.546 and 12.549 *or equiv.*

**12.522 Analytical Chemistry II** (2 cl., 2 q.h.)

Principles and practice of gravimetric and titrimetric methods of analysis. *Prereq.* 12.521 *or equiv.*

**12.523 Analytical Chemistry III** (2 cl., 2 q.h.)

Theory of spectrophotometry, chromatography, and selected electroanalytical methods. *Prereq.* 12.522 *or equiv.*

**12.524 Analytical Chemistry Laboratory I** (3 lab, 2 q.h.)

Qualitative analysis; separations by chemical means, chemical tests, and spot tests for inorganic ions in solution. *Prereq.* 12.521 *(or taken concurrently) or equiv.* (Laboratory fee)

**12.525 Analytical Chemistry Laboratory II** (3 lab, 2 q.h.)

Chemical methods of quantitative analysis. Procedures and techniques of gravimetric and volumetric methods of chemical analysis. *Prereq.* 12.522 *(or taken concurrently) or equiv.* (Laboratory fee)

**12.526 Analytical Chemistry Laboratory III** (3 lab, 2 q.h.)

Instrumental methods of analysis; instruments and procedures for electrometric and optical methods of chemical analysis. *Prereq.* 12.525 and 12.523 *(or taken concurrently) or equiv.* (Laboratory fee)

**12.527 Analytical Chemistry** (Lectures and lab, 4 q.h., Summer Quarter only)

Survey of principles and theories of volumetric, gravimetric, and instrumental analysis. Application made in the laboratory with analyses of unknown samples. *Prereq.* *General Chemistry or equiv.*

**12.531 Organic Chemistry I** (2 cl., 2 q.h.)

Nature of carbon in organic compounds. General principles of structure, nomenclature, preparation, uses, and reactions, of aliphatic hydrocarbons: alkanes, alkenes, alkynes, dienes, cycloalkanes. Position and geometric isomerism. Intro-

duction to free radical and ionic mechanisms of reactions. *Prereq. 12.546 and 12.549 or equiv.*

**12.532 Organic Chemistry II** (2 cl., 2 q.h.)

Structure of benzene, electrophilic aromatic substitution reactions. General principles of structure, nomenclature, preparation, uses, and reactions of the various types of organic compounds, including: alcohols, alkyl and aryl halides, ethers and epoxides, and carboxylic acids. Optical isomerism and introductory chemical kinetics will be discussed. *Prereq. 12.531 or equiv.*

**12.533 Organic Chemistry III** (2 cl., 2 q.h.)

Continuation of Chemistry 12.532 with emphasis on the application of chemical conversions to synthetic problems. Functional derivatives of carboxylic acids, sulfonic acids and their derivatives, amines, diazonium compounds, phenols, aldehydes, and ketones. *Prereq. 12.532 or equiv.*

**12.534 Organic Chemistry Laboratory I** (3 lab, 2 q.h.)

Coordinated with the lecture course, Organic Chemistry I, and deals with the preparation and properties of compounds discussed. *Prereq. 12.546 or equiv. and 12.531 (or taken concurrently) or equiv.* (Laboratory fee)

**12.535 Organic Chemistry Laboratory II** (3 lab, 2 q.h.)

Coordinated with the lecture course, Organic Chemistry II, and deals with the preparation and properties of compounds discussed. *Prereq. 12.534 or equiv.* (Laboratory fee)

**12.536 Organic Chemistry Laboratory III** (3 lab, 2 q.h.)

Coordinated with the lecture course, Organic Chemistry III, and deals with the preparation and properties of compounds discussed. *Prereq. 12.535 or equiv.* (Laboratory fee)

**12.541 Physical Chemistry I** (2 cl., 2 q.h.)

The three states of matter, atomic and molecular forces, physical properties, and molecular structure; heat, work, and heat capacity; thermochemistry. *Prereq. 10.323, 11.306, and 12.546 plus 12.549 or equiv.*

**12.542 Physical Chemistry II** (2 cl., 2 q.h.)

Thermodynamics, solutions, chemical equilibria, phase diagrams, and chemical kinetics. *Prereq. 12.541 or equiv.*

**12.543 Physical Chemistry III** (2 cl., 2 q.h.)

Electrical conductance, electromotive force, ionic equilibria, colloids, quantum theory, and photochemistry. *Prereq. 12.542 or equiv.*

**12.544 General Chemistry I** (2 cl., 2 q.h.)

Fundamental concepts; symbols, formulas, and equations; atomic structure and Periodic Law; chemical bonding; oxygen, ozone, and hydrogen; the gaseous state and gram mole volume; the liquid and solid states; water and hydrogen peroxide. *Prereq. 10.327 or equiv. (or taken concurrently).* (Not open to those students with credit for 12.311 or 12.314.)

**12.545 General Chemistry II** (2 cl., 2 q.h.)

Solutions, solutions of electrolytes, colloids, oxidation and reduction reactions, periodic properties, halogens, chemical equilibrium, electrochemistry; acids, bases, and salts; sulfur family. *Prereq.* 12.544 or equiv. (Not open to those students with credit for 12.312 or 12.315.)

**12.546 General Chemistry III** (2 cl., 2 q.h.)

Ionic equilibrium and weak electrolytes; solubility product principle; hydrolysis. Nitrogen, phosphorus, and their compounds; boron, silicon, and their compounds; alkali and alkaline earth metals; metals of groups III and IV. Nuclear chemistry. Carbon and its compounds. Biochemistry. *Prereq.* 12.545; or equiv. (Not open to students with credit for 12.313 or 12.316.)

**12.547 General Chemistry Laboratory I** (2 lab, 1 q.h.)

Coordinated with the lecture course, General Chemistry I, and deals with the preparation and properties of elements and compounds discussed. *Prereq.* 12.544 (or taken concurrently) or equiv. (Not open to those students with credit for 12.314.) (Laboratory fee)

**12.548 General Chemistry Laboratory II** (2 lab, 1 q.h.)

Coordinated with the lecture course, General Chemistry II, and deals with the preparation and properties of elements and compounds discussed. *Prereq.* 12.547 or equiv. (Not open to those students with credit for 12.315.) (Laboratory fee)

**12.549 General Chemistry Laboratory III** (2 lab, 1 q.h.)

Qualitative analysis experiments, including unknown solutions. *Prereq.* 12.548 or equiv. (Not open to those students with credit for 12.316.) (Laboratory fee)

**12.550 Chemistry for the Citizen** (2 cl., 2 q.h.)

The objective of the course is to give the non-science student an appreciation and some knowledge of the role of chemistry in our technological society and in our everyday lives. To provide background for subsequent discussion; important laws and theories relating to matter and its transformations will be reviewed. There will then follow discussion of the chemistry of such basic human needs as food, clothing, shelter, transportation, and energy production. Other topics may be included or substituted, since students will participate in the selection of subjects for discussion. *Prereq.* none.

**12.551 Instrumental Analysis I** (formerly Instrumental & Radiochemistry I)  
(2 cl., 2 q.h.)

Basic theory and instruments used in electrochemical analysis. Course includes such topics as electrode and cell potentials, potentiometric titrations, direct potentiometry (pH meters and specific ion electrodes), coulometry, polarography, amperometry, electrogravimetry, and conductivity. *Prereq.* 12.523 or equiv.

**12.552 Instrumental Analysis II** (formerly Instrumental & Radiochemistry II)  
(2 cl., 2 q.h.)

Basic theory and instruments used in spectrochemical analysis. Course includes such topics as electromagnetic spectrum, ultraviolet and visible spectrophotometry, infrared spectrophotometry, X-ray analysis, fluorescence and phos-

phorescence, emission spectrophotometry, absorption spectrophotometry, and gas chromatography. *Prereq.* 12.551 or *equiv.*

**12.553 Radiochemistry** (formerly Instrumental & Radiochemistry III) (2 cl., 2 q.h.) Radioactivity and nuclear reactions; production and study of nuclear reactions; equations of radioactive decay; nuclear states and radioactive processes; interaction of radiation with matter; radiation detection and measurement; statistics of radioactivity measurements; techniques for the study of radionuclides; tracers in chemical applications; and nuclear energy. *Prereq.* 12.552 or *equiv.*

**12.554 Physical Chemistry Laboratory I** (3 cl., 2 q.h.)

Experimental studies of viscosity, thermochemistry, and homogeneous equilibrium. *Prereq.* 12.542 (or taken concurrently) or *equiv.* (Laboratory fee)

**12.555 Physical Chemistry Laboratory II** (3 cl., 2 q.h.)

Experimental studies of phase equilibrium, solution thermodynamics, and chemical kinetics. *Prereq.* 12.554 or *equiv.* (Laboratory fee)

## 16—EARTH SCIENCE

*Consultant:* Prof. D. Wilmarth, Earth Sciences (L.A. College)

**16.501 Introduction to Earth Sciences I** (2 q.h.)

The nature and role of the sciences of the Earth; the investigations that have provided information of the Earth as an object in space; our conceptions of the dynamic nature of the Earth. *Prereq.* none.

**16.502 Introduction to Earth Science II** (2 q.h.)

The issue of energy; the significance of energy for the dynamics of the Earth's atmosphere, oceans, and land surfaces. *Prereq.* 16.501 or *equiv.*

**16.503 Introduction to Earth Science III** (2 q.h.)

The complex activities of the Earth's crust; the consequences of crustal dynamics, both internally and externally; the history of the dynamics of crustal activity; the origin of the Earth; structure and origin of the Solar System; the components of the Universe. *Prereq.* 16.502 or *equiv.*

**16.504 Earth Science (Intensive)** (6 q.h.)

A composite of 16.501, 16.502, 16.503 as a one-quarter course. *Prereq.* none.

**16.505 Earth Science A** (3 q.h.)

A composite of 16.501 and the first half of 16.502. *Prereq.* none.

**16.506 Earth Science B** (3 q.h.)

The second half of 16.502 and all of 16.503. *Prereq.* 16.505.

**16.511 History of Science and Technology I** (2 q.h.)

An analysis of the varieties of cultures and civilizations from primitive man to the Roman Empire, emphasizing the interrelationships of science, technology, and society. *Prereq.* 16.503 or *equiv.*

**16.512 History of Science and Technology II (2 q.h.)**

A continuation of History of Science and Technology I covering the period from the Roman Empire to Sir Isaac Newton. *Prereq. 16.511 or equiv.*

**16.513 History of Science and Technology III (2 q.h.)**

A continuation of History of Science and Technology II covering the period from Sir Isaac Newton to the present. *Prereq. 16.512 or equiv.*

**16.521 Introduction to Geology (2 q.h.)**

Introduction to fundamental concepts of the Earth and its crust. Consideration of the nature and properties of the materials composing the Earth; the areal distribution of these materials, and the processes by which they are formed, altered, transported, and deposited; and the nature and development of the landscape. *Prereq. 16.503 or equiv.*

**16.522 Economic Mineralogy (2 q.h.)**

Introduction to the geological occurrence, mineralogy, use, and economics of the more important metallic and non-metallic minerals in the world today. International mineral problems will be discussed. *Prereq. 16.503 or equiv.*

**16.523 Gemology (2 q.h.)**

Introduction to the precious and semiprecious minerals of the Earth's crust. Techniques of gem cutting, polishing, and faceting will be discussed in detail. Opportunity will be available to view and handle gem stones. *Prereq. 16.503 or equiv.*

**16.531 Oceanology I (formerly Oceanography I) (2 q.h.)**

Introduction to the origin of the global ocean; the physical and chemical properties of sea water; development of ocean currents and their effect on land masses of the world; problems of ocean pollution. *Prereq. 16.503 or equiv.*

**16.532 Oceanology II (formerly Oceanography II) (2 q.h.)**

The habitat zones and organisms of the sea; Phytoplankton, zooplankton, and nekton; economic importance of marine resources for expanding world population. *Prereq. 16.531 or equiv.*

**16.533 Oceanology III (formerly Marine Geology) (2 q.h.)**

Physiography and structure of ocean basins; marine geological processes and features; sedimentation, erosion, shorelines, and bottom topography; methods and techniques of marine geological explorations. *Prereq. 16.532 or equiv.*

**16.534 Fisheries Oceanography I (2 q.h.)**

Survey of commercially important marine organisms; life and distribution of commercially important seaweed, shellfish, and fishes; population dynamics and fishery potential of the world's oceans; analysis of fishery stocks and sea farming. *Prereq. 16.533 or equiv.*

**16.535 Fisheries Oceanography II (2 q.h.)**

Examination of fishery methods and techniques around the world; recent technological advancement. *Prereq. 16.534 or equiv.*

**16.536 Fisheries Oceanography III (2 q.h.)**

Commercial products and applications of marine organisms; special emphasis on marine products of commerce from the New England area; chemical, industrial, and dietary applications of marine products. *Prereq.* 16.535 or *equiv.*

**16.537 Marine Resources I (2 q.h.)**

Quantitative and qualitative consideration of energy from the marine environment: current technological developments in the use of tidal power, off-shore oil, natural gas, thermal and nuclear energy from the sea. *Prereq.* 16.533 or *equiv.*

**16.538 Marine Resources II (2 q.h.)**

Food resources of the sea; analysis of world marine food production; marine food technology, conservation, and mariculture. *Prereq.* 16.537 or *equiv.*

**16.539 Marine Resources III (2 q.h.)**

Coastal zone recreational resources: beaches, artificial fishing reefs; shore erosion; SCUBA, boating, sailing, angling, and surfing. *Prereq.* 16.538 or *equiv.*

**16.551 Principles of Astronomy I (2 q.h.)**

The nature and scope of astronomy; the geocentric universe; the heliocentric universe; celestial reference systems; time and the calendar; the sun-moon-earth system; astronomical instruments. *Prereq.* 16.503 or *equiv.*

**16.552 Principles of Astronomy II (2 q.h.)**

The Solar System; the inner planets; the outer minor planets; the outer major planets; the telescopic planets; the asteroid belt; meteors; comets; the sun as a source of energy and center of organization. *Prereq.* 16.551 or *equiv.*

**16.553 Principles of Astronomy III (2 q.h.)**

The triangulation of space; stellar population; star color and motion; star systems; stellar evolution; galaxies. *Prereq.* 16.552 or *equiv.*

**16.554 Observational Astronomy (3 q.h.)**

An introduction to the planets, stars, and constellations that are visible to the naked eye. Lectures, the planetarium, and actual viewing sessions are all used during the course. Primary emphasis will be placed on those stars and constellations easily seen from mid-northern latitudes.

**16.557 Celestial Astronomy I (2 q.h.)**

A thorough examination of the sun as a typical star; determination of stellar physical properties—the instrumentation and the information: size, mass, density; chemical composition, surface temperature, rotation, axial tilt, distance. *Prereq.* 16.553 or *equiv.*

**16.558 Celestial Astronomy II (2 q.h.)**

Star systems—the visual, telescopic, and spectroscopic doubles; simple star systems; stellar populations; H-R diagrams and stellar evolution; multiple stars; irregular stars; nova; nebulae. *Prereq.* 16.557 or *equiv.*

**16.559 Celestial Astronomy III (2 q.h.)**

Galactic detection; galactic distribution; forms, types, and possible galactic evolution; the MILKY WAY; inter-stellar and intergalactic space; pulsars, quasars, and black holes; cosmology. *Prereq. 16.558 or equiv.*

**16.561 Physical Geography I (2 q.h.)**

Physical assessment of the Earth as a spheroid; relations with the sun; geographic grid; map projections; illumination of the globe; geographic time studies and moon-tide relationships. *Prereq. 16.503 or equiv.*

**16.562 Physical Geography II (2 q.h.)**

Physical weather elements—temperature, pressure, moisture; cyclonic storms; role of weather elements in world climate. *Prereq. 16.561 or equiv.*

**16.563 Physical Geography III (2 q.h.)**

The Earth's landforms—their formation and description; particular emphasis given to the agents of deposition and erosion: the volcano, the river, the glacier, and ocean waves. *Prereq. 16.562 or equiv.*

**16.567 Human and Cultural Geography (2 q.h.)**

Spatial analysis of people throughout the world—their culture, culture landscapes, cultural history, and cultural ecology; provides for an understanding of differences in world populations. *Prereq. 16.563 or equiv.*

**16.568 Urban Geography I (2 q.h.)**

In-depth analysis of historical and present structure of cities; comparative world urbanism trends; historic city growth patterns; morphology; site and situations; central place theories; external and internal relations; economic base. *Prereq. 16.567 or equiv.*

**16.569 Urban Geography II (2 q.h.)**

An applied approach to urban problems through urban theories and planning techniques; vertical classification of cities; methods of city development; land utilization; land-use survey and mapping techniques; planning approaches; zoning. *Prereq. 16.568 or equiv.*

**16.571 Conservation I (2 q.h.)**

Philosophy of conservation; historical development of the conservation movement in the U.S. since 1900; interactions of economics and conservation practices. *Prereq. 16.503 or equiv.*

**16.572 Conservation II (2 q.h.)**

Problems relating to the supply, use, and management of major renewable natural resources: forests, soil, wildlife, and water. *Prereq. 16.571 or equiv.*

**16.573 Conservation III (2 q.h.)**

Application of the theories and techniques of conservation; problems of urban resources; air and water pollution; recreational resources; the availability of funds. *Prereq. 16.572 or equiv.*

**16.574 Conservation and the Nation (2 q.h.)**

In-depth study of the current practices and problems in our nation; mineral resources availability and allocation; energy resources; atmospheric, fresh and salt water pollution; wildlife and endangered species. *Prereq. 16.573 or equiv.*

**16.575 Conservation and the Community (2 q.h.)**

Examination of the conservation problems at the local level; identification of the problem; the factors involved; the dimension of the problem; the responsibility of the community. *Prereq. 16.574 or equiv.*

**16.576 Conservation Management (2 q.h.)**

Assessment of current practices of the local community; sources of knowledge and assistance among the populace; agencies available to the community; nature and scope of practices needed; practicality of community action. *Prereq. 16.575 or equiv.*

**16.577 Environmental Conservation I (2 q.h.)**

Identification of the natural resources of the land; history of the discovery and use of natural land resources; the scientific, social, and political uses of natural resources. *Prereq. 16.573 or equiv.*

**16.578 Environmental Conservation II (2 q.h.)**

The physical, chemical, and biological significance of the atmosphere; factors that are removed, added, or altered; the economic practices of the urban, suburban, and rural communities; modern methods of detection of atmospheric pollutants; modern techniques and practices designed to deal with the problem. *Prereq. 16.577 or equiv.*

**16.579 Environmental Conservation III (2 q.h.)**

An in-depth analysis of the natural resources of the ocean; reclamation of soil; detection and procurement of mineral resources—especially metals and fuel materials; chemical and thermal pollution problems; the biotic resources and their conservation. *Prereq. 16.578 or equiv.*

**16.580 Economic Geography I (2 q.h.)**

Theoretical approach and case study examination of spatial manifestations of the economy; spatial models and systems; the economic landscape. *Prereq. 16.563 or equiv.*

**16.581 Economic Geography II (2 q.h.)**

Continuation of 16.580—the locational determinants of services, trade, finance, and insurance; transportation and communications; manufacturing, construction, and the extractive industries. *Prereq. 16.580 or equiv.*

**16.582 Applied Climatology (2 q.h.)**

Climatic effects on man—his agricultural and economic activities; macroclimatology and microclimatology in rural, suburban, and urban situations; short- and long-range extremes and their climatological consequences. *Prereq. 16.581 or equiv.*



## 18—BIOLOGY

*Consultant:* Prof. F. D. Crisley, Chairman, Biology Dept. (L.A. College)

*Course Coordinator:* Prof. F. A. Rosenberg (L.A. College)

### **18.507 Gross Anatomy and General Physiology I** (2 cl., 2 q.h.)

Fundamental concepts of living organisms; chemical and biological characteristics of cellular metabolism. The skeletal system and its appendages. General nomenclature, anatomical names and terms. *Prereq. none.*

### **18.508 Gross Anatomy and General Physiology II** (2 cl., 2 q.h.)

The systems of the body and the relationships between them. The structure and function of each. *Prereq. 18.507 or equiv.*

### **18.509 Gross Anatomy and General Physiology III** (2 cl., 2 q.h.)

Continuation of the systems of the body and the relationships between them. *Prereq. 18.508 or equiv.*

### **18.511 Biology I (General)** (3 cl., 3 lab., 4 q.h.)

Universal properties and processes of living organisms; cellular composition and cellular activities; inheritance and cellular control. *Prereq. none.* (Laboratory fee)

### **18.512 Biology II (Animal)** (3 cl., 3 lab., 4 q.h.)

Functional anatomy of animal organ systems, their interactions and environmental relationships. *Prereq. 18.511 or equiv.* (Laboratory fee)

### **18.513 Biology III (Animal)** (3 cl., 3 lab., 4 q.h.)

Systematic comparative study of the structure and functions of animals. Diversity of animals considered from the standpoint of evolutionary adaptation. *Prereq. 18.512 or equiv.* (Laboratory fee)

### **18.519 Plant Biology** (3 cl., 3 lab., 4 q.h.)

Systematic study of the structure and function of plants, principally vascular plants. Survey of the plant-like protists and monerans. *Prereq. 18.511 or equiv.* (Laboratory fee)

### **18.520 Medical Microbiology** (2 cl., 4 lab., 4 q.h.)

Major characteristics of disease-producing organisms. *Prereq. A formal course or professional laboratory experience in bacteriology.* (Laboratory fee)

### **18.521 Microbiology I** (2 cl., 4 lab., 4 q.h.)

Morphology and biochemistry of the bacteria. *Prereq. 18.513 or equiv.* (Laboratory fee)

### **18.522 Microbiology II** (2 cl., 4 lab., 4 q.h.)

Survey of pathogenic microorganisms. *Prereq. 18.521 or equiv.* (Laboratory fee)

### **18.523 Microbiology III** (2 cl., 4 lab., 4 q.h.)

Biology of the protista; the role of microorganisms in the environment and industry. *Prereq. 18.522 or equiv.* (Laboratory fee)

**18.524 Human Anatomy and Physiology I** (2 cl., 2 lab., 3 q.h.)

Introduction to human anatomy; osteology; anatomy of the muscular system, respiratory system, digestive system, the vascular system, urogenital system. The laboratory includes a study of human bone and cat dissection. *Prereq.* 18.506 or 18.513 or *equiv.* (Laboratory fee)

**18.525 Human Anatomy and Physiology II** (2 cl., 2 lab., 3 q.h.)

Principles of physiology and continuation of the study of human anatomy. The laboratory is mainly concerned with muscle physiology. *Prereq.* 18.524 or *equiv.* (Laboratory fee)

**18.526 Human Anatomy and Physiology III** (2 cl., 2 lab., 3 q.h.)

Continuation of the principles of physiology. The anatomy and physiology of the nervous system, physiology of the endocrine system. The laboratory deals with physiology of respiration and the physiology of blood. *Prereq.* 18.525 or *equiv.* (Laboratory fee)

**18.530 Horticulture** (3 q.h.)

The study of the science and art of plants, stressing the use of plants in the home and community. *Prereq.* none. (Laboratory fee)

**18.531 Cell Biology I** (2 cl., 2 q.h.)

Chemical composition of cells, structure of cells and organelles, transport processes, cell motion and excitability, growth. *Prereq.* 18.513, 18.556, 18.558, and 12.533 or *equiv.*

**18.532 Cell Biology II** (2 cl., 2 q.h.)

Cellular energy supply, enzyme function, respiration and metabolism, photosynthesis and other synthetic pathways, control of cellular process. *Prereq.* 18.531 or *equiv.*

**18.533 Cell Biology III** (4 lab., 2 q.h.)

Laboratory techniques in cell biology; microscopy; structure and chemical composition of cells; enzyme measurements; photosynthesis; respiration; active transport; growth. *Prereq.* 18.532 or *equiv.* (Laboratory fee)

**18.535 Advanced Horticulture** (3 q.h.)

The advanced study of the art and science of using plants for home and community. Special emphasis will be accorded various philosophies involving plants and man. *Prereq.* 18.530. (Laboratory fee)

**18.538 Immunology** (2 cl., 4 lab., 4 q.h.)

Biological, chemical, and physical attributes of antigens and antibodies, together with their serological interactions. *Prereq.* 18.523, 12.533, or *equiv.* (Laboratory fee)

**18.551 Histology-Organology I** (1 cl., 2 lab., 2 q.h.)

The morphology of cells and tissues. *Prereq.* 18.513 or *equiv.* (Laboratory fee)

**18.552 Histology-Organology II** (1 cl., 2 lab., 2 q.h.)

The tissue components of the integumentary, digestive, and respiratory systems.

*Prereq.* 18.551 or equiv. (Laboratory fee)

**18.553 Histology-Organology III** (1 cl., 2 lab., 2 q.h.)

The tissue components of the cardiovascular, excretory, reproductive, and endocrine systems. *Prereq.* 18.552 or equiv. (Laboratory fee)

**18.556 Genetics Laboratory** (4 lab., 2 q.h.)

Laboratory exercises involving Principles of Mendelian inheritance, linkage, crossing-over. Classical genetics utilizing *Drosophila*; biochemical studies utilizing *Neurospora*. *Prereq.* 18.558 or equiv. (Laboratory fee)

**18.557 Genetics I** (2 cl., 2 q.h.)

Mitosis, meiosis, and mendelian genetics. *Prereq.* 18.513 or equiv.

**18.558 Genetics II** (2 cl., 2 q.h.)

Chromosome mapping, mutations, translocation, chromosomal aberrations. *Prereq.* 18.557 or equiv.

**18.561 Ecology I** (2 cl., 2 q.h.)

Environmental factors. The soil system. Water. The atmosphere. Temperature, light, wind, pressure. The physico-chemical factors — CO<sub>2</sub>, N and mineral nutrients. Habitat. Distribution of plants and animals in the world according to temperature and precipitation. *Prereq.* 18.513 or equiv.

**18.562 Ecology II** (2 cl., 2 q.h.)

The ecosystem. Ecological niche. The producers, consumers, and decomposers. The pond ecosystem, desert ecosystem, forest ecosystem, and seashore ecosystem. Energy cycle and efficiency of energy utilization. Mass, weight, and energy pyramids. *Prereq.* 18.561 or equiv.

**18.563 Ecology III** (2 cl., 2 q.h.)

Population ecology. Biotic community. Population growth. Relations between the species. Symbiosis. Competition. Predation. Succession. *Prereq.* 18.562 or equiv.

**18.564 Man and His Biosphere I** (2 cl., 2 q.h.)

An ecological analysis of the human situation and man's interaction with other organisms. The necessary foundation of biological principles will be presented.

**18.565 Man and His Biosphere II** (2 cl., 2 q.h.)

A continuation of Man and His Biosphere I. *Prereq.* 18.564 or equiv.

## 19—PSYCHOLOGY

*Consultant:* Prof. H. S. Zamansky, Psychology Dept. (L.A. College)

*Associate Consultant:* Prof. Harlan Lane, Chairman; Psychology Dept. (L.A. College)

### **19.501 Psychology I (2 q.h.)**

An introductory survey of the historical backgrounds of psychology, psychological measurement and testing, and principles of animal and human learning.

### **19.502 Psychology II (2 q.h.)**

Principles of sensory processing, perception, motivation and emotion, and social influences on behavior. *Prereq.* 19.501 or *equiv.*

### **19.503 Psychology III (2 q.h.)**

Personality theory and measurement, behavior disorders, mental health, and psychotherapy. *Prereq.* 19.502 or *equiv.*

### **19.504 Statistics in Psychology I (2 q.h.)**

Scales of measurement in psychological research, measures of central tendency, and variability. *Prereq.* 19.503 or *equiv.*

### **19.505 Statistics in Psychology II (2 q.h.)**

Measures of correlation, introduction to probability, and statistical distributions. *Prereq.* 19.504 or *equiv.*

### **19.506 Statistics in Psychology III (2 q.h.)**

Parametric and non parametric tests of significance, including chi square, t-test, F test, and simple analysis of variance. *Prereq.* 19.505.

Note: 19.504, 19.505, and 19.506 may not be taken in addition to Statistics (39.511, 39.512, 39.513). Psychology majors may substitute 39.511, 39.512, and 39.513 with permission of the Dean.

### **19.507 Psychology (Intensive) (6 q.h.)**

An introductory survey of the historical backgrounds of psychology, psychological measurements and testing, and principles of animal and human learning. Principles of sensory processing, perception, motivation and emotion, and social influences on behavior. Personality theory and measurement, behavior disorders, mental health, and psychotherapy. (*Not open to students who have taken 19.501, 19.502, 19.503.*)

### **19.508 Fundamentals of Psychology I (4. q.h.)**

Basic concepts from most areas of psychological investigation; the experimental orientation to the study of behavior, including child development, individual differences, learning, and social psychology. (Recommended for psychology majors.) (*Not open to students who have credit for 19.501, 502, 503.*)

### **19.509 Fundamentals of Psychology II (4. q.h.)**

The sensory basis of behavior, cognition, perception, motivation, emotions, normal and abnormal personality. (Recommended for psychology majors.) *Prereq.* 19.508 or *equiv.* (*Not open to students who have credit for 19.501, 502, 503.*)

**19.511 Developmental Psychology I** (formerly Child Psychology I) (2 q.h.)

The behavioral examination of developmental abnormalities, as evidenced in mental retardation, childhood schizophrenia, child delinquency, hyperactivity, specific learning problems, and aging, is used to illuminate normal developmental processes. *Prereq.* 19.509, 19.519, 19.503, or *equiv.*)

(It is highly recommended that 19.540 be completed prior to registration for this course.)

**19.512 Developmental Psychology II** (formerly Child Psychology II) ( 2 q.h.)

Genetic factors in development; biological, social, and intellectual development during preschool years; factors in psychological development during the middle-childhood years; psychological and physical changes during adolescence; attitudes toward peer groups and parental figures; vocational choice; and the determination of moral standards and values. *Prereq.* 19.511 or *equiv.*

**19.513 Developmental Psychology III** (formerly Adolescent Psychology) (2 q.h.)

A continuation of 19.512. *Prereq.* 19.512 or *equiv.*

**19.514 Personality I** (2 q.h.)

A systematic study of the normal personality, its growth, and development. Topics include: environmental and constitutional contributions; assessment of personality; research; and a survey of the major theories of personality. (NOT open to students who have taken 19.521.) *Prereq.* 19.509, 19.519 OR 19.503 or *equiv.*

**19.515 Personality II** (Laboratory) (2 q.h.)

Introduction to methods and areas of research in personality. Includes problems of measurement, behavioral and dynamic concepts, and a laboratory project. *Prereq.* 19.514 or *equiv.*

**19.518 Foundations of Psychology I** (4 q.h.)

The basic principles of psychological analysis are taught by a personalized interaction method using videotapes, progress quizzes, one-to-one study tutorials, and optional small group discussions. The student can study at his/her own pace, within flexible calendar limits, and class hours are not preassigned.

**19.519 Foundations of Psychology II** (4 q.h.)

The personalized method of 19.518 is extended, featuring a sequence of graded reading assignments and tutorial sessions, with frequent self-evaluation of study progress. Topics include: the analysis of behavior as applied to education; personality and behavior disorders; brain damage and language; sensory processes; ethology, and aggression. *Prereq.* 19.518 or *equiv.*

**19.523 Motivation** (2 q.h.)

Survey of the various aspects of motivation. Such areas as primary and secondary reinforcement, unconscious motivation, effectance motivation, and the assessment of motive will be considered. *Prereq.* 19.522 or *equiv.*

**19.524 Social Psychology I** (2 q.h.)

The socialization process, social motives, interpersonal perception, group membership and structure. *Prereq.* 19.503 or *equiv.*

**19.525 Social Psychology II (2 q.h.)**

Attitudes, prejudice and ethnic relations, leadership, mass behavior and social movements, and the effects of mass media of communication. *Prereq. 19.524 or equiv.*

**19.532 Industrial Psychology I (2 q.h.)**

Psychology as applied to industry, including such topics as history causation of behavior, attitudes, morale, and supervision. *Prereq. 19.503 or equiv.*

**19.533 Industrial Psychology II (2 q.h.)**

The place of psychological tests in industry, individual differences, leadership, training, design of jobs, and practical application of these topics for the student in industry. *Prereq. 19.532 or equiv.*

**19.534 Industrial Psychology III (2 q.h.)**

Topics studied include motivation, fatigue, safety, and job turnover as related to industry. Special emphasis given to industrial mental health, counseling, interviewing, and personnel selection. *Prereq. 19.533 or equiv.*

**19.536 Psychology of Thought (2 q.h.)**

Psychological factors in intuition, imagination, problem-solving, information processing, and concept learning. *Prereq. 19.503 or equiv.*

**19.537 Psychology of Language (2 q.h.)**

The child's acquisition of language, verbal habits, the analysis and measurement of meaning, cultural determinants of linguistic behavior, communication processes, and recent research in psycholinguistics. *Prereq. 19.503 or equiv.*

**19.538 Psychology of Learning I (2 q.h.)**

Features the application of basic behavioral principles to behavioral development, behavior modification, language development, and programmed learning, and their relations to theoretical considerations in the learning process. *Prereq. 19.503 or equiv.*

**19.540 Psychology of Learning II (Laboratory) (2 q.h.)**

Through direct experience, students gain proficiency in the laboratory analysis of behavior, and in evaluating common generalizations about human behavior. Students design and perform experiments in animal and human learning, memory, decision processes, concept formation, and other topics of individual interest. *Prereq. 19.538 or equiv.*

**19.541 Abnormal Psychology I (2 q.h.)**

An introduction of the study of the etiology and dynamics of the abnormal personality. *Prereq. 19.503 or equiv.*

**19.542 Abnormal Psychology II (2 q.h.)**

The symptomatology and treatment of the neuroses and psychoses. *Prereq. 19.541 or equiv.*

**19.543 Abnormal Psychology III (2 q.h.)**

Psychosomatic, psychopathic, and organic disorders; varieties of psychotherapy. *Prereq.* 19.542 or *equiv.*

**19.544 Abnormal Psychology (Intensive) (6 q.h.)**

Same as 19.541, 19.542 and 19.543. *Prereq.* 19.503 or *equiv.*

**19.545 Psychological Therapies (2 q.h.)**

A survey of techniques for treating deviant behavior, from classical psychanalytical therapies through methods of behavior modification. *Prereq.* 19.543 or *equiv.*

**19.549 Sensation and Perception I (2 q.h.)**

An introduction to the nature of the perceptual world; the nature of object recognition and identification; spatial organization; contextual effects; learning and perception; and the influence of attitudinal, motivational, and personality factors on perception. *Prereq.* 19.503 or *equiv.*

**19.550 Sensation and Perception II (Laboratory) (2 q.h.)**

Students do laboratory experiments on seeing, hearing, touching, and tasting. Studies may include dark adaptation, loudness, binaural interaction, brightness constancy, two-point touch thresholds, information processing, and interactions between the senses. *Prereq.* 19.549 or *equiv.*

**19.560 Psychology of Women (2 q.h.)**

The examination, in both historical and contemporary context, the body of knowledge studying woman, her function in social roles, and her behavior as determined genetically, physiologically, and psychologically. The research implications, future life styles, roles, and contributions of women.

**19.561 Scientific Foundations of Psychology I (formerly Historical Development of Psychology I) (2 q.h.)**

Historical development of psychology from its philosophical beginnings. *Prereq.* Two of the following: 19.515, 19.539, 19.550, 19.581.

**19.562 Scientific Foundations of Psychology II (formerly Historical Development of Psychology II) (2 q.h.)**

Major schools of psychology which have influenced modern psychological research, including functionalism, behaviorism, Gestalt psychology, and psychoanalysis. *Prereq.* 19.561 or *equiv.*

**19.571 Senior Seminar in Psychology (2 q.h.)**

Small groups of students meet to discuss topics in psychology of mutual interest. Each seminar has a different flavor, depending upon the student group and faculty. *Prereq.* 19.562 or *equiv.*

**19.580 Physiological Psychology I (2 q.h.)**

How nerves function and work together in the nervous system; how our sense organs provide the brain with information about the outside world; how the

brain acts to produce external observable behavior; and how such psychological concepts as perception, learning, motivation arousal, and emotion may relate to nervous system activity. *Prereq.* 19.509, 19.519 or 19.503, or *equiv.*

**19.581 Physiological Psychology II (Laboratory) (2 q.h.)**

Laboratory experiments based on evolution of the nervous system, sensory and motor mechanisms, motivation and emotion, sleep, attention and perception, learning, and memory. *Prereq.* 19.580 or *equiv.*

**19.588 Drugs and Behavior (2 q.h.)**

The application of quantitative behavior techniques in animals and man, to determine the behavioral effects of pharmacological agents. A systematic survey of the experimental literature. *Prereq.* 19.503 or *equiv.*

**19.589 Impact of Psychology on Society (2 q.h.)**

A consideration of such recent developments as the uses of intelligence and aptitude tests; psychosurgery and electroconvulsive therapy; techniques of behavior modification and control; minority and women's rights movements; direct brain stimulation by implanted electrodes; use of psychoactive drugs; use of the lie detector machine; and the application of experimental techniques to humans. *Prereq.* 19.503 or *equiv.*

**19.591 Honors Program I (4 q.h.)**

*Prereq.* approval of the Dean.

**19.592 Honors Program II (4 q.h.)**

*Prereq.* 19.591.

**19.593 Honors Program III (4 q.h.)**

*Prereq.* 19.592.

**19.699 Field Work in Psychology (6 q.h.)**

Refer to page 87 describing field work courses (To be discussed with Department Consultant or Major Advisor prior to registration.)

## 20—ANTHROPOLOGY

*Consultant:* (See Sociology)

**20.501 Anthropology I (formerly Introduction to Physical Anthropology) (2 q.h.)**

An introduction to elements of physical anthropology, covering such subjects as the primates, fossil man and evolution, problems of heredity and genetics, problems of race and racial classification, and the bases of cultural behavior.

**20.502 Anthropolgy II (formerly Cultural Anthropology I) (2 q.h.)**

An introduction to cultural anthropology covering the nature of culture; methods and theories. *Prereq.* 20.501 or *equiv.*



**20.503 Anthropology III** (formerly Cultural Anthropology II) (2 q.h.)

Characteristic features of the language, family life, rituals, and values of tribal peoples in different parts of the world. *Prereq.* 20.502 or *equiv.*

**20.504 Anthropology (Intensive)**

Same as 20.501, 502, plus 503.

**20.521 Culture and Personality** (2 q.h.)

A cultural approach integrating concepts of social role, values, personality and socialization, and linguistic considerations. *Prereq.* 20.503 or *equiv.*

**20.531 Primitive Social Organization** (2 q.h.)

The institutions of primitive societies; comparative approaches and functional explanations of a limited number of societies; the dynamics of continuity and change of culture and social organization. *Prereq.* 20.503 or *equiv.*

**20.532 Primitive Religion** (2 q.h.)

A study of religious beliefs and rituals of tribal peoples in many parts of the world, including the origin of religious behavior, the relationship of religious behavior to other aspects of culture, and the psychological factors involved. *Prereq.* 20.503 or *equiv.*

**20.533 Acculturation** (2 q.h.)

An examination of the processes of acculturation in culture contact situations of tribal and non-tribal peoples. Focus is on the role of the individual, and the concepts of personality and values in relation to this process. *Prereq.* 20.503 or *equiv.*

**20.537 Anthropological Theory** (2 q.h.)

A history of major orientations, emphasizing the principal contemporary orientations in the field. Evolutionary approaches, culture area and historical analysis, functionalism, role structure, comparative methods, social relations approaches, and the theory of cognitive structure. *Prereq.* 20.503 or *equiv.*

**20.541 North American Indian** (2 q.h.)

Prehistory of the North American Indian, including the study of aboriginal culture areas, utilizing a comparative analysis of representative Indian tribes and their cultures as the method of study. Family life, religion, warfare patterns, and political organization are described. *Prereq.* 20.503 or *equiv.*

**20.544 African Peoples and Cultures** (2 q.h.)

African geography, prehistory, and cultures; the spectrum of cultures ranging from the Pygmy to Ashanti Federation; the family, lineage, clan, and tribe as these relate to problems of political and economic change in contemporary Africa. *Prereq.* 20.503 or *equiv.*

**20.547 Latin American Peoples and Cultures** (2 q.h.)

Tribal and peasant systems, traditional values, and institutions of Latin America, with particular emphasis on Hispanic America. *Prereq.* 20.503 or *equiv.*

**20.548 Studying the Family Cross-Culturally (2 q.h.)**

Family systems in a variety of cultural settings: Todas, the Hopi, the Anglo-Saxon, Kibbutz, etc.

**20.549 Folklore (2 q.h.)**

The general nature of folklore and methods employed in its study with emphasis on the behavioral-structural approach.

**20.550 Peasant Society and Culture (2 q.h.)**

The development of the concept of peasantry. Analyses of representative case studies of traditional peasant societies in the non-Western and Western world. *Prereq.* 20.503 or 20.602 or *equiv.*

**20.551 Changing Peasantries (2 q.h.)**

Peasant societies of Asia, Europe, Africa, and Latin America; historical traditions and social structure; change and modernization. *Prereq.* 20.503 or 20.602 or *equiv.*

**20.552 Eastern European Peasantry in the Modern World (2 q.h.)**

Selected studies of peasant societies in East-Central and Southeastern Europe from Russia to Greece. The traditional peasant village, collectivized peasant units. Programs of modernization under socialism and capitalism. *Prereq.* 20.503 or 20.602 or *equiv.*

**20.560 Language and Culture (2 q.h.)**

The function of language in human society and an introduction to the relationship between the patterns of language and the patterns of culture.

**20.601 Principles of Anthropology I (4 q.h.)**

An intensive introduction to elements of physical anthropology covering such subjects as the primates, fossil man and evolution, problems of heredity and genetics, problems of race and racial classification, the bases of cultural behavior, and the nature of culture.

**20.602 Principles of Anthropology II (4 q.h.)**

An intensive introduction to cultural anthropology covering characteristic features of tribal peoples, language, family life, rituals, values, social organization, etc. *Prereq.* 20.601 or *equiv.*

**20.699 Field Work in Anthropology (6 q.h.)**

(Refer to page 87 describing field work courses.)

To be arranged with a departmental field work adviser prior to registration. *Prereq.* Major in Sociology-Anthropology and completion of 12 credits in Anthropology. (Students may receive credit for only one departmental field work course. Credit for 20.699 precludes credit for 21.699).

## 21—SOCIOLOGY

*Consultant:* Prof. Lila Leibowitz, Sociology Dept. (L.A. College)

*Coordinator:* Prof. M. Golden, Sociology Dept. (L.A. College)

### 21.501 Sociology I (2 q.h.)

Basic concepts and theories relating to the study of man as a participant in group life with emphasis on social structure, culture, socialization, and the family.

### 21.502 Sociology II (2 q.h.)

A continuation of Sociology I with major emphasis on primary groups, associations, social stratification, collective behavior, and population. *Prereq.* 21.501 or *equiv.*

### 21.503 Sociology III (2 q.h.)

A continuation of Sociology II emphasizing a critical analysis of American society with particular attention to problems of social, political, urban, and industrial change. *Prereq.* 21.502 or *equiv.*

### 21.504 Sociology (Intensive) (6. q.h.)

Basic concepts and theories relating to the study of man as a participant in group life with emphasis on social structure, culture, socialization, and the family. Primary groups, associations, social stratification, collective behavior, and population. The major institutional areas, with particular attention to problems of social, political, urban, and industrial change. (*Not open to students who have taken 21.501, 21.502, 21.503.*) *Prereq.* 30.506.

### 21.505 Drugs and Society (2 q.h.)

An introduction to the sociology of drugs. Examines social definitions of drugs, conditions of their use, and socialization into drug use. Considers deviant drug use and effects of social control on definitions and use. A range of licit and illicit drugs will be considered but major emphasis will be given to alcohol, marihuana, and heroin.

### 21.506 Sociology of Religion (2 q.h.)

An examination of the role of religious belief systems and institutions in various societies, ancient and modern, Western and non-Western.

### 21.507 Sex in Society: The Study of Sex Roles (2 q.h.)

Analysis of historical and contemporary development in how men's and women's changing roles are related to the society-at-large.

### 21.508 Sociology of Literature (2 q.h.)

A novel approach to novels and other literary productions from lyrics and love songs to sci-fi and films. Sociological analysis of content and contexts.

### 21.509 Sociology of Socialist Societies (2 q.h.)

Comparative sociology of China, USSR, Cuba, others, focussing on ideology, social organization, economy, polity, education, child care, women's positions, etc. The course will emphasize processes of change and the interrelationships between institutions.

**21.512 Social Research Methods I** (2 q.h.)

An introduction to social research methods with particular attention to problems of theory and method in both anthropology and sociology. *Prereq. Consent of the Instructor or 12 q.h. in sociology-anthropology.*

**21.513 Social Research Methods II** (2 q.h.)

A continuation of Social Research Methods I with emphasis on data collection, measurement, and scaling in both anthropology and sociology. *Prereq. 21.512 or equiv.*

**21.514 Social Research Methods III** (2 q.h.)

A continuation of Social Research Methods II stressing the analysis of data *Prereq. 21.513 or equiv.*

**21.517 Social Theory I** (formerly Foundations of Sociological Theory) (2 q.h.)

An historical survey of sociological theorists including the work of de Tocqueville, Comte, Marx, Durkheim, Cooley, and others. *Prereq. Consent of the Instructor or 12 q.h. in sociology-anthropology.*

**21.518 Social Theory II** (formerly Contemporary Sociological Theory I) (2 q.h.)

A study of major theoretical issues in sociology. Discussion concentrates on systematic questions and topics, as opposed to particular theorists, but material is drawn from theorists such as Weber, Simmel, Thomas, Mannheim, Merton, and Parsons. *Prereq. 21.517 or equiv.*

**21.519 Social Theory III** (formerly Contemporary Sociological Theory II) (2 q.h.)

A seminar in which the principal focus will be upon questions of theoretical interest, e.g., the problem of order, the problem of change, the role of the individual in change. Students will present their papers in class. *Prereq. 21.518 or equiv.*

**21.528 Social Stratification: Class, Status, and Power** (2 q.h.)

A comparative study of the nature of class structure with emphasis on the United States and with reference to India and England. Discussion of such topics as theories of class structure, factors determining class membership, differential class behavior, and social mobility. *Prereq. 21.503 or equiv.*

**21.531 Social Change** (2 q.h.)

An analysis of the changing patterns in social and economic institutions, a discussion of modern social trends, and a review of current literature in a field. *Prereq. 21.503 or equiv.*

**21.534 Social Control** (2 q.h.)

The study of group membership as a determinant of behavior, analysis of status and role, patterns of authority, and group ideology as factors in the evaluation of conduct. *Prereq. 21.503 or equiv.*

**21.535 Political Sociology: Who Gets What** (2 q.h.)

The social structure of political life emphasizing relationships in the structure of society with its classes, occupations, races, and levels of opportunity as they affect political activity. *Prereq. 21.503 or equiv.*

**21.538** (see 25.538).

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**21.543** (see 25.543).

**21.544** (see 25.544).

**21.545** (see 25.545).

**21.546 Sociology of Deviant Behavior** (2 q.h.)

Analysis of the variety of social problems and their relationship to the organization of society. Particular attention will be given to alcoholism, sex offenses, drug abuse, mental health, and other problems relating to an urban industrial society. *Prereq. 21.503 or equiv.*

**21.547 Social Problems** (2 q.h.)

An overview of contemporary American social problems and the application of sociological concepts, methods, and principles to these problems. *Prereq. 21.503 or equiv.*

**21.550 Juvenile Delinquency** (2 q.h.)

A study of factors in delinquency and an examination of the implications for prevention, rehabilitation, and treatment. *Prereq. 21.503 or equiv.*

**21.551 Family and Marriage I** (2 q.h.)

A comparative and historical treatment stressing the past history and development of the family. *Prereq. 21.503 or equiv.*

**21.552 Family and Marriage II** (2 q.h.)

A continuation of Family and Marriage I emphasizing the backgrounds of contemporary problems in the context of functions, forms, and processes of this institution. *Prereq. 21.551 or equiv.*

**21.553 Racial and Cultural Relations I** (2 q.h.)

A study of the relationships between various racial, national, cultural, and religious groups with emphasis on the historical development of black-white relationships in American society. *Prereq. 21.503 or equiv.*

**21.554 Racial and Cultural Relations II** (2 q.h.)

A continuation of Racial and Cultural Relations I stressing the problems of contemporary black-white relationships in American and other societies. *Prereq. 21.553 or equiv.*

**21.555 Racial and Cultural Relations III** (2 q.h.)

A continuation of Racial and Cultural Relations II with specific attention to religious nationality, and non-African racial groups in American and other multi-racial societies. *Prereq. 21.554 or equiv.*

**21.556 Sociology of Poverty (2 q.h.)**

An analysis of American poverty in historical perspective, drawing on comparisons with other countries. Critical evaluation of sociological research and theories relating to poverty. Consideration of causes and effects of poverty, as well as societal responses to poverty and its consequences. Suitable for students in applied fields, such as nursing, criminal justice, education, allied health, pre-med, and pre-law.

**21.557 Urban Sociology (2 q.h.)**

An analysis of the various causes, characteristics, and effects of urbanization in several different cultures of the world. Specific attention is given to the problems of urban and suburban living and the changing structure of the city. *Prereq.* 21.503 or equiv.

**21.558 Community Analysis (2 q.h.)**

Ecological theories of man's relation to his physical environment. Development of the concept and discussion of community study methods. Contrasts between rural communities and urban neighborhoods. Discussion and evaluation of community-action programs. *Prereq.* 21.503 or equiv.

**21.559 Seminar in Urban Studies (2 q.h.)**

Interdisciplinary approaches to analyses of urban issues, continuing student projects. *Prereq.* One previous course in urban studies field.

**21.560 Medical Sociology (2 q.h.)**

Sociological concepts and research relating to the study of patterns of behavior in the areas of health and disease. Emphasis on the family, community, medical organizations, class, and status as social subsystems related to the field of health. *Prereq.* 21.503 or equiv.

**21.561 Sociology of Mental Health**

The emphasis of this course will be the sociological aspects of mental health and mental disorder. There will be presentations and discussions of the social history of mental illness, epidemiological and cross-cultural approaches to mental disorder, the career of the mental patient, the functions of psychiatry in society, community and social treatment modalities, and other aspects of social psychiatry. *Prereq.* 21.503 or 21.502 or equiv.

**21.563 Social Gerontology: The Aged in Society (2 q.h.)**

An examination of social factors involved in aging, with specific reference to how biological and psychological age change influence behavior, social roles, and cultural patterns. The relation of aging to social change, and special provisions for the aged. *Prereq.* 21.503 or equiv.

**21.567 Population (2 q.h.)**

The use of demographic methods in the analysis of social structures. Introduction to the use of population size and composition, birth rates, and other demographic data in the comparative analysis of societies. *Prereq.* 21.503 or equiv.

**21.570 Sociology of Occupations and Professions (2 q.h.)**

Analysis of the social relations within occupational groups, of occupational

structure, and of institutional aspects of an occupation. Relationships of supervisors, peers, colleagues, subordinates, and clientele; their significance for work role behavior. *Prereq.* 21.503 or *equiv.*

**21.573 Sociology of Industry** (2 q.h.)

Comparison of pre-industrial and industrial society, stressing the impact of industry on society and the relationship between industry, culture, and values. Diversification and specialization. Human relations in industry: analysis of subordinate—super ordinate behavior, line and staff relationships, and formal and informal groups. *Prereq.* 21.503 or *equiv.*

**21.575 Sociology of Formal Organizations: Humans, Machines, and Bureaucracy** (2 q.h.)

A study of formal organizations and the principles that govern organizational life. Weber's theory of bureaucracy and the concept of authority; communication systems and other conceptions of formal organizations. The structure of work groups and their effect on the larger organization. *Prereq.* 21.503 or *equiv.*

**21.591 Honors Program I** (4 q.h.)

*Prereq.* Approval of Dean.

**21.592 Honors Program II** (4 q.h.)

*Prereq.* 21.591.

**21.593 Honors Program III** (4 q.h.)

*Prereq.* 21.592.

**21.601 Principles of Sociology I** (Recommended for Majors) (4. q.h.)

An intensive introduction to basic concepts and theories relating to the study of man as a participant in group life. Emphasis is placed on socialization, culture, social structure, primary groups, family, social stratification, and population.

**21.602 Principles of Sociology II** (4 q.h.)

A continuation of Principles of Sociology I with emphasis on a critical analysis of American society with particular attention to problems of social, political, urban, and industrial change. *Prereq.* 21.601 or *equiv.*

**21.612 Social Research Methods I (Intensive)** (4 q.h.)

An intensive introduction to social research methods in both anthropology and sociology with particular attention to problems of theory, methods, and data collection. *Prereq.* Consent of the Instructor or 12 q.h. in sociology-anthropology.

**21.613 Social Research Methods II (Intensive)** (4 q.h.)

A continuation of Social Research Methods I (Intensive), with emphasis on data collection, measurement, scaling, and the analysis of data. *Prereq.* 21.612.

**21.617 Social Theory I (Intensive)** (4 q.h.)

An historical survey of sociology theorists, including the work of de Tocqueville, Comte, Marx, Durkheim, Cooley, Weber, Simmel, and others. *Prereq.* Consent of the Instructor or 12 q.h. in sociology-anthropology.

**21.618 Social Theory II (Intensive) (4 q.h.)**

A study of major theoretical issues in sociology. Discussion concentrates on systematic questions and topics, but material is drawn from theorists such as Mannheim, Merton, Parsons. Students will present papers in class on questions of theoretical interest; e.g., the problem of order, the problem of change, the role of the individual in change, etc.

**21.699 Field Work in Sociology (6 q.h.)**

(Refer to page 87 describing field work courses.)

To be arranged with a departmental field work adviser prior to registration. *Prereq.* Major in Sociology-Anthropology and completion of *Social Research Methods* 21.514 or 21.613. (Students may receive credit for only one departmental field work course. Credit for 21.699 precludes credit for 20.699).

## **25—SOCIAL WELFARE**

*Course Coordinator:* Prof. Lois Ames (College of Criminal Justice)

**25.538 Introduction to Social Welfare I (formerly 21.538) (2 q.h.)**

An introduction to the nature and scope of the social welfare institution, its historical development, the effects of urban industrialization, and its relationship to present day American Society.

**25.539 Introduction to Social Welfare II (formerly 21.539) (2 q.h.)**

A continuation of Introduction to Social Welfare I, with particular attention to the development of social security and the welfare state.

**25.540 Introduction to Social Welfare III (formerly 21.540) (2 q.h.)**

A continuation of Introduction to Social Welfare II, focusing on selected aspects of the current social welfare system, its attempts to alleviate poverty, and other social problems.

**25.543 Introduction to Social Work Practice I (formerly 21.543) (2 q.h.)**

An introduction to the functions of the helping profession of social work, its settings and methods. Specific techniques such as interviewing, history taking, and recording skills are presented.

**25.544 Introduction to Social Work Practice II (formerly 21.544) (2 q.h.)**

A continuation of Introduction to Social Work Practice I, with particular attention to the functioning of social workers in selected settings.

**25.545 Introduction to Social Work Practice III (formerly 21.545) (2 q.h.)**

A continuation of Introduction to Social Work Practice II, with emphasis on enhancement of practice skills.



## 22—POLITICAL SCIENCE

*Consultant:* Prof. W. S. Jones, Chairman, Political Science Dept. (L.A. College)  
*Course Coordinator:* Prof. Minton Goldman (L.A. College)

### **22.501 Principles of Political Science I (2 q.h.)**

Evolution of the nation-state. Analysis of basic political concepts. Study of basic forms of the contemporary political system.

### **22.502 Principles of Political Science II (2 q.h.)**

Analysis of constitutional and totalitarian models. Study of contemporary British and Soviet political systems. *Prereq.* 22.501 or *equiv.*

### **22.503 Principles of Political Science III (2 q.h.)**

The American political system including study of civil rights. International politics and American foreign policy since 1945. *Prereq.* 22.502 or *equiv.*

### **22.505 Contemporary Political Theory (2 q.h.)**

Political ideas and systems of political thought from Machiavelli to the present. *Prereq.* 22.503 or *equiv.*

### **22.506 American Political Thought (2 q.h.)**

Political thought from the colonial period to the present including a study of the impact of religious, economic, and judicial theory on the structure of American ideas. *Prereq.* 22.503 or *equiv.*

### **22.507 Principles of Political Science (Intensive) (6 q.h.)**

Evolution of the nation-state. Analysis of basic political concepts. Study of basic forms of the contemporary political system. Analysis of constitutional and totalitarian models. Study of contemporary British and Soviet political systems. The American political system including study of Civil Rights. International politics and American foreign policy since 1945. (*Not open to students who have taken 22.501, 22.502, 22.503, or equiv.*)

### **22.508 Research Methods (2 q.h.)**

An introduction to some of the most common methods of carrying out research in the discipline of political science. Problems of theory construction, data-gathering, and a selection of analytical research tools including bibliographical aids and the computer are examined.

### **22.511 American National Government (2 q.h.)**

A study of the form and structure of the federal constitution and an analysis of the legislative process at the national level. *Prereq.* 22.503 or *equiv.*

### **22.512 Urban and Metropolitan Government (2 q.h.)**

The political, structural, and functional problems of an urbanizing United States, including an analysis of urban, suburban, and metropolitan governments. *Prereq.* 22.503 or *equiv.*

### **22.513 Political Parties and Pressure Groups (2 q.h.)**

Party government in the United States and Great Britain. A contrasting study focusing on the interaction of party and government. *Prereq.* 22.503 or *equiv.*

**22.514 American Constitutional Law (2 q.h.)**

A case analysis of the development of federalism, the separation of powers, and the role of the federal and state courts in constitutional development.

**22.515 Civil Rights (2 q.h.)**

An evaluation of the quality and content of civil liberties in the United States. Emphasis will be placed on the first, fifth, sixth, fourteenth, and fifteenth amendments to The Constitution.

**22.516 Public Administration I (2 q.h.)**

An introduction to the theory, forms, and processes of administration at the national and state level.

**22.517 Public Administration II (2 q.h.)**

Selected problems. Case study approach to examination of relation between the theory and practice of public administration. *Prereq. 22.516 or equiv.*

**22.518 Government and Politics of the States (2 q.h.)**

A study of state and local government and problems and the function and operational responses to them.

**22.519 The Legislative Process (2 q.h.)**

An institutional, functional analysis of the roles of Congress, the executive, and political parties in the legislative process.

**22.520 The American Presidency (2 q.h.)**

A multifaceted examination of the nation's Chief Executive: the presidential electoral process; the President's many constituencies; and the differing styles of various 20th-century Presidents. The constitutional and extra-constitutional powers of the office are some areas considered.

**22.521 Comparative Government I (2 q.h.)**

A comparative analysis of political culture, organization, and behavior in England, France, and Germany. *Prereq. 22.503 or equiv.*

**22.522 Comparative Government II (2 q.h.)**

A continuation of 22.521. *Prereq. 22.521 or equiv.*

**22.532 International Organization (2 q.h.)**

Development of international organizations with special emphasis on the United Nations, specialized agencies, and regional organizations. *Prereq. 22.503 or equiv.*

**22.533 American Foreign Policy (2 q.h.)**

The constitution and political instruments for the formulation of American foreign policy. *Prereq. 22.503 or equiv.*

**22.534 Soviet Foreign Policy (2 q.h.)**

A study of the evolution of Soviet foreign policy since 1917 with emphasis on the development of the international Communist movement.

**22.535 International Relations (4 q.h.)**

Elements and limitations on national power. Contemporary world politics, problems of war and peaceful coexistence. *Prereq.* 22.503 or *equiv.* (Not to be taken by students who have credit for 22.531.)

**22.536 Introduction to Political Theory (4 q.h.)**

Development of the political ideas of the Western world. The major philosophers of Greece, Rome, The Christian Era, and the Renaissance. *Prereq.* 22.503 or *equiv.* (Not to be taken by students who have credit for 22.504.)

**22.537 European Political Parties (2 q.h.)**

A study of political party systems in England, France, and Germany emphasizing ideology, organization in and out of Parliament, electoral strategies, and voter behavior.

**22.538 Communist China's Foreign Policy (2 q.h.)**

A study of the Peking government's relations with Afro-Asia, the Soviet orbit, and the West. Attention is given to policy objectives, strategy, tactics, and the method of decision-making in both the party and state apparatus.

**22.541 International Law (2 q.h.)**

A procedural and substantive study of legal relations among nation states.

**22.542 American Foreign Policy I (2 q.h.)**

Recent and current American foreign affairs. *Prereq.* 22.533 or *equiv.*

**22.543 American Foreign Policy II (2 q.h.)**

Recent and current American foreign affairs, continued. *Prereq.* 22.542 or *equiv.*

**22.544 Government and Politics in the Soviet Union I (2 q.h.)**

An analysis of modern totalitarian theory and practice is followed by a study of the ideological and historical bases of the Soviet dictatorship. *Prereq.* 22.522 or *equiv.*

**22.545 Government and Politics in the Soviet Union II (2 q.h.)**

A continuation of 22.544. A study of the Soviet federalism, party and state organization, with special attention to the problems of political succession. *Prereq.* 22.544 or *equiv.*

**22.547 Government and Politics of Communist China I (2 q.h.)**

A study of Chinese political culture with emphasis on the nineteenth-century cultural, economic, and political impact of the West, the emergence of the Communist Party under the leadership of Mao, and the progressive disintegration of Kuomintang leadership. *Prereq.* 22.522 or *equiv.*

**22.548 Government and Politics of Communist China II (2 q.h.)**

A study of ideology, party, and state organization and behavior, and the Cultural Revolution. *Prereq.* 22.547 or *equiv.*

**22.551 Current Political Issues (2 q.h.)**

A topical analysis of the constitutional and political basis of selected problems in American political life.

**22.552 Government and Politics in the Middle East (2 q.h.)**

A study of political change, economic growth, and social adaptation in selected countries of the Middle East. Foreign policies are also considered, especially the ties of the Middle Eastern countries with Northern Africa. *Prereq.* 22.522 or *equiv.*

**22.553 Government and Politics in the Middle East II (2 q.h.)**

A continuation of 22.552. *Prereq.* 22.552 or *equiv.*

**22.555 Government and Politics of Latin America I (2 q.h.)**

After a discussion of the historical background of the Latin American nations, an analysis of the cultural, economic, social, and political characteristics of these countries is undertaken. Political violence and the breakdown of democratic governments are given particular attention. *Prereq.* 22.522 or *equiv.*

**22.556 Government and Politics of Latin American II (2 q.h.)**

Analysis of politics of Mexico, Cuba, and Chile; the Communist, one-party, and democratic approaches to political development are compared; each of the three countries is used as an example. *Prereq.* 22.555 or *equiv.*

**22.558 Government and Politics of South East Asia (2 q.h.)**

A study of political instability and problems of establishing democratic structures and processes in the Philippines, Thailand, and India. *Prereq.* 22.522 or *equiv.*

**22.559 Government and Politics of Japan (2 q.h.)**

The historical development of the Japanese nation is studied with particular attention to the growth of fascism. Efforts to create a viable democracy since World War II is a major concern of the course. *Prereq.* 22.522 or *equiv.*

**22.560 Politics and Policies of the Developing Nations I (2 q.h.)**

Colonialism and the struggles for independence are discussed and the common problems of developing nations are analyzed. Topics include economic development, urbanization, cultural fragmentation, and revolution. *Prereq.* 22.522 or *equiv.*

**22.561 Politics and Policies of the Developing Nations II (2 q.h.)**

Based on the foundation provided in Part I, this course deals with efforts of developing countries to achieve rapid social, economic, and political modernization. The frequency of military takeovers and the prevalence of corrupt, inefficient government bureaucracies are discussed. The democratic and authoritarian avenues toward development are compared and evaluated. *Prereq.* 22.560 or *equiv.*

**22.562 Government and Politics of Sub Saharan Africa (2 q.h.)**

Comparative analysis of political culture, organization, and behavior of African states south of the Sahara. *Prereq.* 22.522 or *equiv.*

**22.563 Government and Politics of Northern Africa (2 q.h.)**

Comparative analysis of political culture, organization, and behavior of African states north of the Sahara. Emphasis is on Morocco, Algeria, Tunisia, and Egypt. *Prereq.* 22.522 or equiv.

**22.564 Communism in Eastern Europe I (2 q.h.)**

A study of the conditions and circumstances surrounding the establishment of Communist regimes in Eastern Europe immediately after the Second World War, and their relations with Soviet Union. *Prereq.* 22.522 or equiv.

**22.565 Communism in Eastern Europe II (2 q.h.)**

A continuation of 22.564. A study of nationalism, popular revolt, and socio-economic change in the 1950's and 1960's. Attention is given to the changing role of the Soviet Union in bloc affairs and the development of polycentrism. *Prereq.* 22.564 or equiv.

**22.570 Consumer Advocacy I (2 q.h.)**

A pragmatic course designed to define and expand the role of consumers in the marketplace. It is intended to focus upon consumer issues which confront us daily, so that individuals may deal with them intelligently and effectively. While not designed to make students "consumer-lawyers," it will touch upon legal as well as social, economic, and political aspects of consumer problems.

**22.571 Consumer Advocacy II (2 q.h.)**

A continuation of 22.570. *Prereq.* 22.570 or equiv.

**22.572 Consumer Advocacy III (2 q.h.)**

A continuation of 22.571. *Prereq.* 22.571 or equiv.

**22.591 Honors Program I (4 q.h.)**

*Prereq.* Approval of the Dean.

**22.592 Honors Program II (4 q.h.)**

*Prereq.* 22.591.

**22.593 Honors Program III (4 q.h.)**

*Prereq.* 22.592.

**22.601 Introduction to Political Science I (4 q.h.)**

Basic political concepts and forces of organization from the classical Greeks to the modern nation-state. The Soviet Union and the United Kingdom are contrasted as contemporary illustrations of the institutional distinction between a totalitarian and constitutional system. (*Not open to students who intend to receive credit for 22.501, 22.502, 22.503.*)

**22.602 Introduction to Political Science II (4 q.h.)**

The development of operational liberty in the United States and its constitutional underpinnings are considered, together with an analysis of the national American political process and the conduct of recent American foreign relations. (*Not open to students who intend to receive credit for 22.501, 22.502, 22.503.*)

## 23—HISTORY

*Consultant:* R. H. Robinson, Chairman, History Dept. (L.A. College)

*Coordinator of Western Civilization and Adviser to History Majors:* G. H. Herman, History Dept. (L.A. College)

### **23.500 The Historian's Craft** (4 q.h.)

The ways in which the historian studies the past with emphasis on research and writing.

### **23.501 Western Civilization I** (2 q.h.)

The beginnings of Western Civilization, with emphasis on the political, economic, and social history of ancient and medieval times to 1300.

### **23.502 Western Civilization II** (2 q.h.)

Early Modern Europe from 1300 to 1789, with an examination of the two major intellectual movements, the Renaissance and the Enlightenment, and their impact on the rise of national states, capitalism, and Protestantism.

### **23.503 Western Civilization III** (2 q.h.)

Modern Europe from 1789 to the present, emphasizing the rise of ideology in a technological age.

### **23.504 American History I** (2 q.h.)

America from 1763 to 1840, with emphasis on political institutions and policies of the new republic.

### **23.505 American History II** (2 q.h.)

The United States from 1840 to 1900, with emphasis on the rise of the sectional controversy, the Civil War, and the economic development of the nation after the war.

### **23.506 American History III** (2 q.h.)

The United States since 1900; an age of urbanized industrialism and international crisis.

### **23.509 Western Civilization A\*** (3 q.h.)

Western Civilization to 1648. (*Not open to students who intend to receive credit for 23.501 and/or 23.502.*)

### **23.510 Western Civilization B\*** (3 q.h.)

Western Civilization since 1648. (*Not open to students who intend to receive credit for 23.502 and/or 23.503.*)

### **23.511 American History A\*** (3 q.h.)

America from 1763 to 1877. (*Not open to students who intend to receive credit for 23.504 and/or 23.505.*)

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\*The course sequence 23.509, 23.510 is identical to 23.501, 23.502 and 23.503.

The course sequence 23.511, 23.512 is identical to 23.504, 23.505 and 23.506.

The A and B sequence is accomplished in two quarters rather than three for the I, II, III sequence.

**23.512 American History B\* (3 q.h.)**

The United States since 1877. (*Not open to students who intend to receive credit for 23.505 and/or 23.506.*)

**23.515 Women in American History (2 q.h., Group III)**

An historical examination of the position and role of women in American history.

**23.516 Women in European History (2 q.h., Group II)**

An historical examination of the position and role of women in European history.

**23.520 Population in History (2 q.h., Group I or II)**

An application of the principles of demography to European history, from Roman times to the present.

**23.521 Ancient Middle East (2 q.h., Group I)**

A study of ancient cultures and people in the Middle East, to the rise of Islam.

**23.522 Ancient Greece (2 q.h., Group I)**

The origin and development of Greek civilization.

**23.523 Ancient Rome (2 q.h., Group I)**

Roman civilization in ancient times, with emphasis on the rise of the Republic and the decline of the Empire.

**23.524 Early Middle Ages (2 q.h., Group I)**

Europe from the decline of the Roman Empire to 1050, with emphasis on barbarian migrations, the role of religion in medieval society, and the fashioning of political and economic institutions of feudalism and manorialism .

**23.525 Late Middle Ages (2 q.h., Group I)**

The medieval period from 1050 to 1350 with emphasis on the church-state controversy and the growth of classicism in the arts.

**23.526 Early Modern Europe (2 q.h., Group I)**

The political, economic, and social history of Europe from 1350 to 1648.

**23.527 England, 500–1603 (2 q.h., Group I)**

England, to the coming of the Stuarts.

**23.530 Byzantine History (2 q.h., Group I)**

A political and cultural history of the Eastern Christian world, from the fourth century to the sacking of Constantinople in 1453.

**23.531 Islamic History (2 q.h., Group IV)**

The history of the Muslim Arab world, from the seventh century to the end of the Abbasid Caliphate in 1258.

**23.532 Ottoman History (2 q.h., Group IV)**

A study of the rise, glory, decay, and attempts at reform in the Ottoman Empire from the thirteenth century to World War I.

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\*The course sequence 23.509, 23.510 is identical to 23.501, 23.502 and 23.503.

The course sequence 23.511, 23.512 is identical to 23.504, 23.505 and 23.506.

The A and B sequence is accomplished in two quarters rather than three for the I, II, III sequence.

**23.533 History of the Jews I (2 q.h., Group I)**

A survey of the Jews from the end of antiquity to early modern times, from a cultural and intellectual perspective.

**23.534 History of the Jews II (2 q.h., Group II)**

The role and position of the Jew in modern history.

**23.537 European Intellectual History, 1350–1688 (2 q.h., Group I)**

The major ideas of the Renaissance and Reformation.

**23.538 European Intellectual History, 1688–1815 (2 q.h., Group I)**

The broad spectrum of eighteenth-century thought, with emphasis on scientific, religious, and political ideas.

**23.539 European Intellectual History since 1815 (2 q.h., Group II)**

The main currents of European thought considered in their social and political context, from Romanticism to the present.

**23.541 Europe, 1648–1789 (2 q.h., Group I)**

Europe from the end of the Thirty Years' War to the French Revolution.

**23.542 Europe, 1789–1870 (2 q.h., Group II)**

Europe from the French Revolution to the Franco-Prussian War, with a stress on the struggles for liberalism and nationalism.

**23.543 Europe, 1870–1914 (2 q.h., Group II)**

The background of World War I, with an emphasis on the roles of nationalism, militarism, imperialism, and the European alliance system.

**23.544 Europe, 1914–1939 (2 q.h., Group II)**

Europe from World War I to World War II, emphasizing the failures of peace-makers at Versailles and the subsequent rise of aggressive autocracies in Italy and Germany.

**23.545 Europe since 1939 (2 q.h., Group II)**

World War II and its aftermath, with an emphasis on the Cold War and attempts by European nations to unify the continent.

**23.548 England, 1603–1815 (2 q.h., Group I)**

England in the Stuart and Hanover age, with emphasis on the victory of the parliamentary institutions over the monarchy.

**23.549 England since 1815 (2 q.h., Group II)**

The democratization of English life in the nineteenth and twentieth centuries, with emphasis on changing imperial and international relations.

**23.552 English Constitutional History to 1485 (2 q.h., Group I)**

The development of the English constitution from Anglo-Saxon roots to the coming of the Tudors, with attention to local as well as central government.

**23.553 English Constitutional History since 1485 (2 q.h., Group II)**

The victory of Parliament over the King and the subsequent democratization of England's governmental institutions and processes.



**23.554 France since 1815** (2 q.h., Group II)

France after Napoleon, with attention to continuing attempts by the French people to find satisfactory political institutions.

**23.555 Germany since 1815** (2 q.h., Group II)

An analysis of the role of nationalism in German life after 1815, with emphasis on unification, militarism, and imperialism.

**23.556 Italy since 1815** (2 q.h., Group II)

The unification of Italy, the attempt to establish constitutional monarchy, the rise of fascism after World War I, and the movement toward democratic republicanism after World War II.

**23.557 Ireland since 1800** (2 q.h., Group II)

A study of the Irish question in British politics, from the Act of Union to the establishment of the Free State.

**23.558 European Economy and Society to 1750** (4 q.h., Group I)

A topical survey of European economic and social development in the pre-industrial period.

**23.559 European Economy and Society since 1750** (4 q.h., Group II)

A topical survey of European economic and social development from the beginnings of industrialization to the present.

**23.560 American Indians** (2 q.h., Group III)

A survey of the American Indian from pre-Columbian times to the present.

**23.561 Colonial America to 1689** (2 q.h., Group III)

The exploration and settlement of North America, with emphasis on the establishment of political, social, and economic institutions.

**23.562 Colonial America, 1689–1763** (2 q.h., Group III)

North America in an age of international rivalry for the continent.

**23.563 American Revolution and Constitution** (2 q.h., Group III)

America's quest for independence from England and the efforts to establish governments in the new republic.

**23.564 American Constitutional History, 1789–1900** (2 q.h., Group III)

Selected topics in the development of the American Constitution, with primary emphasis on federalism and the relations of government and the economy.

**23.565 American Constitutional History since 1900** (2 q.h., Group III)

Topics include the conflict between the liberal and conservative attitudes toward the role of government in the economy and the role of the Supreme Court in the struggle for civil liberties and rights.

**23.566 United States since 1945** (4 q.h., Group III)

The American people, from the close of World War II to the present.

**23.567 American Diplomatic History** (2 q.h., Group III)

Selected topics in the history of American foreign relations and policy since 1789.

**23.568 American Social History** (2 q.h., Group III)

Selected topics in the life of the American people since 1789.

**23.569 American Economic History** (2 q.h., Group III)

Selected topics in the development of the capitalist economy in America since 1789, with attention to the role of government.

**23.571 American Urban History** (2 q.h., Group III)

The development of urban society in the United States since 1800.

**23.574 Afro-American History** (2 q.h., Group III)

The history of Afro-Americans, from colonial times to the present.

**23.575 Populism and Progressivism** (2 q.h., Group III)

A topical history of the United States from 1877 to 1917, concentrating on its social and cultural reactions to the processes of industrialization and urbanization.

**23.576 The United States, 1917–1933** (2 q.h., Group III)

A topical history of the United States in time of world war, prosperity, and depression.

**23.577 The Age of Roosevelt** (2 q.h., Group III)

America in the era of the Great Depression and World War II.

**23.580 Perceptions of America** (2 q.h., Group III)

A study of the image of America and Americans, as expressed by Americans and others.

**23.581 Latin America to 1826** (2 q.h., Group IV)

The fusing of Indian, Iberian, and Negro cultures in Latin America and the quest for political independence.

**23.582 Latin America, 1826–1920** (2 q.h., Group IV)

The attempts by Latin Americans to establish stable societies and democratic governments.

**23.583 Contemporary Latin America** (2 q.h., Group IV)

The struggles of Latin Americans for political, economic, and social development since 1920.

**23.584 The Far East to 1850** (2 q.h., Group IV)

The history of China and Japan prior to their opening by the West in the mid-nineteenth century.

**23.585 China since 1850** (2 q.h., Group IV)

A century of China's history, with emphasis on the western impact on Chinese

civilization, China's struggle to maintain independence, and the victory of communism in the twentieth century.

**23.586 Japan since 1850** (2 q.h., Group IV)

An analysis of Japanese domestic developments and foreign relations since the mid-nineteenth century.

**23.588 Africa to 1885** (2 q.h., Group IV)

African prehistory; the evolution of African government and society; the dynamics of Afro-European contact before 1885.

**23.589 Africa since 1885** (2 q.h., Group IV)

The European impact on Africa; the rise of African nationalism; the emergence of independent African states.

**23.591 Modern Middle East** (2 q.h., Group IV)

The Middle East since 1914, with attention to Zionism, Pan Arabism, the effects of two world wars, and the postwar settlements.

**23.592 India and Pakistan** (2 q.h., Group IV)

The political and religious history of the peoples who formed India and Pakistan with an account of internal developments and foreign relations since independence.

**23.593 Southeast Asia** (4 q.h., Group IV)

The cultures of the peoples of Southeast Asia, with an examination of the impact of European nations upon them and an account of their quests for national identity and economic development.

**23.594 Russia, 1450–1801** (2 q.h., Group I)

The emergence of Russia as a recognized European power with an account of westernization and expansion in the eighteenth century.

**23.595 Russia, 1801–1917** (2 q.h., Group II)

The history of the Russian people and their government, from the Days of Czar Alexander I to the revolutions of 1917.

**23.596 Russia since 1917** (2 q.h., Group II)

The revolutions of 1917 and the subsequent history of the Russian people and their government, with special emphasis on foreign relations.

**23.597 Honors Program I** (4 q.h.)

*Prereq.* Approval of Dean.

**23.598 Honors Program II** (4 q.h.)

*Prereq.* 23.597.

**23.599 Honors Program III** (4 q.h.)

*Prereq.* 23.598

**23.601 Western Civilization IV** (4 q.h.)

The major ideas and institutions of Western Civilization from ancient times to

1648. (*Not open to students who intend to receive credit for 23.501, 23.502, or 23.509.*)

**23.602 Western Civilization V** (4 q.h.)

A continuation of 23.601, covering the period since 1648. (*Not open to students who intend to receive credit for 23.502, 23.503, or 23.510.*)

**23.699 Field Work in History** (6 q.h.)

Extra-collegiate experience in historical research or historical agencies. (Refer to page 87 describing field work courses) *Pereq. Survey courses in Western Civilization and American History and 23.500.*

**25—SOCIAL WELFARE** (see page 190.)

**26—PHILOSOPHY**

*Consultant:* Prof. E. Hacker, Philosophy Dept. (L.A. College)

**26.501 Introduction to Philosophy I** (2 q.h.)

An examination of the aims, functions, and methods of philosophy by means of a systematic study of one or two philosophers. Questions in ethics and moral philosophy stressed in the latter part of the quarter.

**26.502 Introduction to Philosophy II** (2 q.h.)

Development of some of the major conceptions of the meaning of human existence, the nature of human knowledge, and the nature and existence of God.

**26.503 Introduction to Philosophy III** (2 q.h.)

A study of some of the central views of the aims, structure, and functions of society. One other area in philosophy will be discussed in the latter half of this quarter.

**26.510 Introduction to Philosophy (Intensive)** (6 q.h.)

An examination of the aims, functions, and methods of philosophy in comparison with other areas of human knowledge and valuation. Inquiry into the nature of morality, kinds of moral judgments, and types of ethical theories with particular attention to their application to moral issues of our day. Comparison of major conceptions of the ultimate meaning of human existence, the nature of mind, freedom, and God. (*Not open to students who have taken 26.501, 26.502, 26.503, or equiv.*)

**26.504 The Greek and Roman Philosophers** (2 q.h.)

Development of western thought from the seventh century B.C. until the time of Christ with emphasis upon Plato, Aristotle, and the Stoics.

**26.505 The Ages of Belief and Adventure** (2 q.h.)

The leading philosophers of the early Christian, Medieval, and Renaissance periods with particular attention to St. Augustine, St. Thomas, Francis Bacon, and Thomas Hobbes. *Prereq. 26.504 or equiv.*

**26.506 The Ages of Reason and Enlightenment** (2 q.h.)

Philosophy in the seventeenth and eighteenth centuries with emphasis upon Descartes, Spinoza, Locke, Hume, and Kant. *Prereq. 26.505 or equiv.*

**26.507 Philosophy of the Nineteenth Century (2 q.h.)**

Philosophic trends in the nineteenth century considered as background for the understanding of ideas influential in the twentieth century. *Prereq.* 26.503, 26.506 or *equiv.*

**26.508 Twentieth-Century Philosophy (2 q.h.)**

Discussion of the major contemporary philosophic trends as represented by logical positivism, analytic philosophy, and existentialism. *Prereq.* 26.507 or *equiv.*

**26.509 Major Thinkers of Our Time (2 q.h.)**

An in-depth study of two or three philosophers, representatives of which would be Austin, Ayer, Carnap, Dewey, Lewis, Maritain, Moore, Sartre, or Whitehead. *Prereq.* 26.508 or *equiv.*

**26.511 Philosophy of Art I (2 q.h.)**

The nature of art and the experience of beauty.

**26.512 Philosophy of Art II (2 q.h.)**

Theories concerning art and aesthetic experience such as those of Plato, Aristotle, Tolstoy, Santayana, Dewey, and Cassirer. *Prereq.* 26.511 or *equiv.*

**26.513 Philosophy of Art III (2 q.h.)**

A study of the problems of artistic taste, standards of criticism, and the objectivity of artistic judgements. Concludes with a discussion of the arts, the artist, and society. *Prereq.* 26.512 or *equiv.*

**26.514 The Human Search for Meaning (2 q.h.)**

The role of selected recent philosophy and literature in the human struggle for meaning and identity. Some of the themes to be explored: freedom and responsibility; alienation and anxiety; death and finitude.

**26.515 Images of Man in Philosophy (2 q.h.)**

An exploration of selected concepts of the nature of man in philosophy and literature.

**26.516 Technology and Man (2 q.h.)**

An exploration of the human issues which have arisen in a technological age. Issues such as the relations between man and machine and the moral issues surrounding organ transplants are representative.

**26.517 Utopias and Anti-Utopias (2 q.h.)**

A study of utopian and anti-utopian literature as expressions of social criticism and as theories of social reform.

**26.521 Philosophy of Religion I (2 q.h.)**

A study of the nature of religious experience and beliefs about the nature of God.

**26.522 Philosophy of Religion II (2 q.h.)**

The origins, nature, and functions of religion. *Prereq.* 26.521 or *equiv.*

**26.523 Philosophy of Religion III (2 q.h.)**

Intensive study of some of the major problems such as natural and moral evil, the soul, immortality, miracles, and religious knowledge. *Prereq.* 26.522 or *equiv.*

**26.524 The Great Eastern Religions I (2 q.h.)**

The development of eastern primitive religions and their subsequent evolution into the sophisticated forms of the contemporary eastern religions.

**26.525 The Great Eastern Religions II (2 q.h.)**

Study of Egyptian and Babylonian religions, Confucianism, and Taoism. *Prereq.* 26.524 or *equiv.*

**26.526 The Great Eastern Religions III (2 q.h.)**

Study of Hinduism, Buddhism, and Shintoism. *Prereq.* 26.525 or *equiv.*

**26.527 The Great Western Religions I (2 q.h.)**

The development of western primitive religions and their subsequent evolution into the sophisticated forms of the contemporary western religions.

**26.528 The Great Western Religions II (2 q.h.)**

Study of Zoroastrianism, Judaism, and Christianity. *Prereq.* 26.527 or *equiv.*

**26.529 The Great Western Religions III (2 q.h.)**

Study of the religion of Islam, contemporary religious sects, and religious phenomena. *Prereq.* 26.528 or *equiv.*

**26.531 Ethics I (2 q.h.)**

Introduction to moral problems such as egoism and altruism, good and evil, conscience, obligation, and human freedom.

**26.532 Ethics II (2 q.h.)**

Critical discussion of some of the major ethical theories and the implications of modern psychological and sociological theories about man and society. *Prereq.* 26.531 or *equiv.*

**26.533 Ethics III (2 q.h.)**

The relations of ethical theory and morality to religion, social philosophy, art, and science. *Prereq.* 26.532 or *equiv.*

**26.534 Logic (2 q.h.)**

Emphasis upon logic as a practical discipline which enables the student to analyze types of arguments and to detect fallacies in arguments.

**26.535 Ethics (Intensive) (6 q.h.)**

Same as 26.532, 533, and 534.

**26.541 Social Philosophy I (2 q.h.)**

Critical examination of the leading socio-political ideologies in regard to their conceptions of the character, structure, and function of society. Plato and Aristotle emphasized.

**26.542 Social Philosophy II** (2 q.h.)

Continuation of 26.541 with emphasis upon Hobbes, Locke, Hegel, and Mill. *Prereq.* 26.541 or *equiv.*

**26.543 Social Philosophy III** (2 q.h.)

Emphasis upon Marxism, contemporary communism, fascism, capitalism, and contemporary social ideologies. *Prereq.* 26.542 or *equiv.*

**26.544 Selected Topics in Philosophy I** (2 q.h.)

Advanced course. Readings chosen jointly by students and instructor. Has included such topics as aggression, utopian literature, Marxism, pragmatism.

**26.545 Selected Topics in Philosophy II** (2 q.h.)

Continuation of 26.544

**26.546 Selected Topics in Philosophy III** (2 q.h.)

Continuation of 26.545

**26.551 The Existentialist Revolt** (2 q.h.)

Sources of existentialism in the Western tradition with emphasis upon Kierkegaard and Nietzsche.

**26.552 The Existentialist Challenge** (2 q.h.)

The existential view of man and his world with emphasis upon Heidegger, Sartre, and the religious existentialists—Marcel, Tillich, and Buber. *Prereq.* 26.551 or *equiv.*

**26.553 Existentialism Appraised** (2 q.h.)

Contemporary assessments of the existentialism movement, its meaning, significance, and truth. *Prereq.* 26.552 or *equiv.*

**26.560 Buddhism** (2 q.h.)

The principal teachings of the Buddhists.

**26.561 Hinduism** (2 q.h.)

The major Hindu teachings.

**26.562 Islam** (2 q.h.)

The major principles of Islam.

**26.563 Judaism** (2 q.h.)

The elements of Judaism.

**26.567 Mysticism: East and West** (2 q.h.)

An exploration of mystical experiences through a discussion of some representative religious mystics.

**26.570 Religion and Myth** (2 q.h.)

A study of myths as the expressions of religious man's experience of the world and himself. Examples will be drawn from primitive religions and the traditional religious of East and West.

## 27—FINE ARTS

*Consultant:* Prof. R. L. Wells, Chairman, Art Dept. (L.A. College)

### **27.501 Introduction to the Arts** (2 q.h.)

Introduction to the techniques and meanings of various artistic expressions in painting, sculpture, drawing, architecture, and graphic arts.

### **27.504 History of Art I** (2 q.h.)

History of Western art from prehistoric times to the end of the Roman Empire.

### **27.505 History of Art II** (2 q.h.)

History of Western art from the end of the Roman Empire to the late sixteenth century. *Prereq.* 27.504.

### **27.506 History of Art III** (2 q.h.)

History of Western Art from the late sixteenth century to the twentieth century. *Prereq.* 27.505.

### **27.507 Ancient Architecture** (2 q.h.)

Developments in the builder's art from prehistoric times to the end of the classical Era.

### **27.508 Medieval and Renaissance Architecture** (2 q.h.)

A study of architecture from the Early Christian Period through the Renaissance.

### **27.509 European Architecture** (2 q.h.)

Seventeenth-, eighteenth-, and nineteenth-century architecture.

### **27.510 Ancient Painting and Sculpture I** (2 q.h.)

A survey of art from pre-historic period through Egypt and Mesopotamia.

### **27.511 Ancient Painting and Sculpture II** (2 q.h.)

A survey of art from Crete through Greece and Rome.

### **27.512 Medieval Painting and Sculpture** (2 q.h.)

Early Christian era; Byzantine, Romanesque, and Gothic Art.

### **27.514 European Painting** (2 q.h.)

Development of painting from the late sixteenth century to the middle of the nineteenth century in Northern and Western Europe.

### **27.515 Modern Painting I** (2 q.h.)

The development of painting from late nineteenth century to the Surrealist movement.

### **27.516 Modern Painting II** (2 q.h.)

The various styles of painting from Surrealism to contemporary art.

### **27.518 Twentieth-Century American Architecture** (2 q.h.)

Study of architecture from Richardson to the present.



**27.519 Twentieth-Century European Architecture** (2 q.h.)

Study of architecture from Le Corbusier to the present.

**27.520 Italian Renaissance Art** (2 q.h.)

Study of painting and sculpture of the fifteenth and sixteenth centuries.

**27.522 French Painting** (2 q.h.)

Study of French painting of the nineteenth century.

**27.523 English Art** (2 q.h.)

English art from the Gothic to the nineteenth century.

**27.524 American Art I** (2 q.h.)

The development of American architecture, sculpture, and painting from Colonial times to the War of Independence.

**27.525 American Art II** (2 q.h.)

The development of American architecture, sculpture, and painting from the Revolution to the Civil War. *Prereq.* 27.524 or *equiv.*

**27.526 American Art III** (2 q.h.)

The development of American architecture, sculpture, and painting from the Civil War to the present. *Prereq.* 27.525 or *equiv.*

**27.527 Life Drawing I** (3 q.h.)

Basic life drawing involving anatomy and study of figure drawing. *Prereq.* 27.543 or other drawing courses on departmental approval.

**27.528 Life Drawing II** (3 q.h.)

Life drawing of the figure in various media. *Prereq.* 27.527.

**27.529 Life Drawing III** (3 q.h.)

Figure drawing and figure composition in various media. *Prereq.* 27.528.

**27.535 African Art** (2 q.h.)

Various stylistic characteristics of sculpture and other artistic expressions of the major cultures of Africa from the thirteenth to the twentieth century.

**27.536 Latin American Art** (2 q.h.)

Pre-Columbian and post-Columbian art forms of Latin America, including architecture, sculpture, painting, and the decorative arts—excluding Mexico.

**27.538 Chinese Painting** (2 q.h.)

A history of the Chinese art of painting from its inception to the twentieth century.

**27.539 Japanese Art** (2 q.h.)

The arts of painting, sculpture, and architecture in Japan.

**27.540 Freehand Drawing** (3 q.h.)

An elementary course in drawing. (*Does not fulfill drawing requirement for the studio art major.*)

**27.541 Drawing I (3 q.h.)**

Practice in the techniques and development of drawing in pencil, pen, and ink, with concentration on basic drawing problems.

**27.542 Drawing II (3 q.h.)**

Practice in the techniques of wash drawing, scratch board drawing, and mixed medias. *Prereq.* 27.541 or *equiv.*

**27.543 Drawing III (3 q.h.)**

Study of human anatomy and the practice of figure drawing and composition. *Prereq.* 27.542 or *equiv.*

**27.544 Graphic Arts I (3 q.h.)**

Creative expression in various graphic art media such as woodcuts.

**27.545 Graphic Arts II (3 q.h.)**

Execution of prints in various media and the printing process.

**27.546 Graphic Arts III (3 q.h.)**

Execution of more advanced printmaking with various graphic media.

**27.547 European Graphic Arts (2 q.h.)**

History of graphic arts from the Medieval period to the end of the nineteenth century. Development of engraving, etching, woodcuts, and lithography.

**27.551 Painting—Basic Level I (3 q.h.)**

Practice and creative expression in the technical fundamentals of figure and landscape painting.

**27.552 Painting—Basic Level II (3 q.h.)**

Creative expression in advanced painting problems of figure study. *Prereq.* 27.551 or *equiv.*

**27.553 Painting—Basic Level III (3 q.h.)**

Creative expression in advanced painting problems in composition. *Prereq.* 27.552 or *equiv.*

**27.554 Painting—Advanced Level I (3 q.h.)**

Painting with concentration upon the development of personal expression and style.

**27.555 Painting—Advanced Level II (3 q.h.)**

Painting with concentration upon the development of personal style and the execution of various painting problems.

**27.556 Painting—Advanced Level III (3 q.h.)**

Development of style and experimentation with various media.

**27.557 Advanced Graphic Arts I (3 q.h.)**

Execution of advanced printmaking in various media. *Prereq.* 27.544, 546, 547 or other graphic courses on departmental approval.

**27.558 Advanced Graphic Arts II (3 q.h.)**

Printmaking in various experimental media. *Prereq.* 27.557.

**27.559 Advanced Graphic Arts III (3 q.h.)**

Printmaking in various media. *Prereq.* 27.558.

**27.560 Oriental Indian Art (2 q.h.)**

The national Indian styles of sculpture, painting, and architecture.

**27.561 Basic Color and Design I (3 q.h.)**

Study and practice of the principles of design and science of color.

**27.562 Basic Color and Design II (3 q.h.)**

Advanced study in the science of color. *Prereq.* 27.561 or *equiv.*

**27.563 Basic Color and Design III (3 q.h.)**

Advanced problems in design. *Prereq.* 27.562 or *equiv.*

**27.564 Advanced Color and Design (3 q.h.)**

Creative expression in various color and design problems.

**27.571 Basic Commercial Design I (3 q.h.)**

Study and creative work in layout, illustration, advertising, and typography.

**27.572 Basic Commercial Design II (3 q.h.)**

Advanced commercial design problems. *Prereq.* 27.571 or *equiv.*

**27.573 Basic Commercial Design III (3 q.h.)**

Advanced commercial design problems. *Prereq.* 27.572 or *equiv.*

**27.574 Advanced Commercial Design (3 q.h.)**

Creative problems in illustration design.

**27.587 History of Photography I (2 q.h.)**

Early developments in photography from ancient times to the daguerreotype.

**27.588 History of Photography II (2 q.h.)**

Developments of modern photography from the work of Stieglitz to the present.

*Prereq.* 27.587 or *equiv.*

**27.589 History of Photography III (2 q.h.)**

Study of styles in contemporary photography with emphasis on major modern photographs. *Prereq.* 27.588 or *equiv.*

**27.591 Art Seminar (2 q.h.)**

Specific techniques, problems, and theories in art. Students will be responsible for research projects and papers.

**27.592 New York Art Seminar (2 q.h.)**

Study and inspection of the painting collections in the Metropolitan Museum of Art, Frick Collection, Museum of Modern Art, and the Guggenheim Museum.

**27.594 European Art Seminar (2 q.h.)**

A four-week study and travel seminar through major European art centers, with emphasis on the major works of art in each.

**27.597 History and Technique of Film Art I (2 q.h.)**

A study of the development of film art in Europe and America from its origins to 1945.

**27.598 History and Technique of Film Art II (2 q.h.)**

A study of the development of film art in the United States and Europe from 1945 to the present. *Prereq.* 27.597.

**27.599 History and Techniques of Film Art III (2 q.h.)**

Study of films by major contemporary directors. *Prereq.* 27.598.

**27.600 Honors Program I (4 q.h.)**

*Prereq.* Approval of the Dean.

**27.601 Honors Program II (4 q.h.)**

*Prereq.* 27.600.

**27.602 Honors Program III (4 q.h.)**

*Prereq.* 27.601.

**27.603 Mexican Art (2 q.h.)**

Pre-Columbian from the Archaic and Classical periods in the present.

## 28—MUSIC

*Consultant:* Prof. R. L. Nadeau, Chairman, Music Dept. (L.A. College)

**28.501 Introduction to Music (2 q.h.)**

The principal concern is to teach the student a technique for listening actively to music. The course surveys and analyzes works by J. S. Bach, Mozart, Beethoven, Wagner, Stravinsky, and others.

**28.503 Women in Music (2 q.h.)**

A study in depth of the historical role of women in music: woman as composer, performer, patron, inspiration.

**28.507 Fundamentals of Music I (for non-majors) (2 q.h.)**

A course for beginners who are not music majors. The development of music reading and hearing skills. Simple notation of pitch and rhythm. Scales, intervals, chords.

**28.508 Fundamentals of Music II (2 q.h.)**

Continuation of course 28.507. New students admitted upon examination. Dictation, part-singing, and sight-singing. Beginning instrumental studies in recorder. *Prereq.* 28.507 or equiv.

**28.509 Fundamentals of Music III (2 qh.)**

Continuation of course 28.508. New students admitted upon examination. Major, minor, and modal melodies. Seventh-chord symbols. Voice leading, cadences. Chorale analysis. Continuation of instrumental studies on recorder. *Prereq.* 28.508 or equiv.

**28.510 Music and Art (2 q.h.)**

A chronological survey of the relationship between music and art comparing the musical styles of great composers and the pictorial qualities of the master painters of our heritage.

**28.511 History of Music (2 q.h.)**

A survey of the historical trends in music from ancient times to the present. Men, ideas, and events which have influenced change in musical style will be highlighted. From this course, the student should gain a broad overview of musical literature and history which will enhance his understanding and future concert-going.

**28.515 Contemporary Music (2 q.h.)**

Contemporary music and its techniques seen as a mirror of our time. Major composers studied include Stravinsky, Debussy, Ravel, Bartok, Prokofiev, Hindemith, Milhaud, and Schoenberg.

**28.517 Music as a means of Social Expression (formerly Music as the Expression of Man) (2 q.h.)**

A general and philosophical view of music in Western culture covering the following: aspects of social relevance; compositional style in various periods; and important themes, (war and peace, love and rejection, etc.) examined in a musical context. When pertinent, related concepts from the fine arts and from philosophy will be explored. Live performance, recordings, and audiovisual media will be used.

**28.520 Musical Forms (2 q.h.)**

The fugue, the sonata, theme and variations, rondo, the lied; analysis of the symphony, the string quartet, the opera, and the tone poem.

**28.521 The Symphony (2. q.h.)**

A thorough study of the symphonies of Haydn, Mozart, Beethoven, Berlioz, Brahms, Dvorak, and Tchaikovsky.

**28.522 The Concerto (2 q.h.)**

The evolution of the concerto from its origins in the Baroque period to its use in our time. Concertos for every instrument are studied, including piano, cello, violin, horn, organ, and bassoon.

**28.523 Great Literature for the Piano (2 q.h.)**

The study of pianoforte music written in the nineteenth and early twentieth centuries by masters such as Beethoven, Chopin, Schumann, Liszt, Debussy, and Ravel.

**28.524 The World of Opera (2. q.h.)**

Distinctions will be made between music drama and the number opera. Students

will be required to acquire librettos. Aria, recitative, ensemble, and other basic elements of opera will be isolated and discussed.

### **28.526 Jazz: Evolution and Essence (2 q.h.)**

The many roots of jazz and its development from the worksong and the vocal blues to the avant-garde experiments of today. Contributions of the major performers: soloists, arrangers, composers. The problems of "on-the-spot" creativity and personal expression. The "beat." Multiplicity of accent.

### **28.528 Ear Training I (2 q.h.)**

Rhythmic articulation. Solmization studies in major keys; G and F Clef. Conductor's beat patterns in simple meter. Rhythmic and melodic dictation in major keys. Interval studies.

### **28.529 Ear Training II (2 q.h.)**

Continuation of course 28.528. Solmization studies in major keys with chromatics, and in minor keys: G, F, and C clef. Conductor's beat patterns in simple and compound meter. Melodic dictation in major and minor keys. Harmonic dictation. Interval studies. *Prereq. 28.528 or equiv.*

### **28.530 Ear Training III (2 q.h.)**

Continuation of course 28.529. Advanced rhythmic, melodic, and harmonic dictation. Sight singing of one- and two-part melodies in major and minor keys, with chromatics. Modulation. Singing in four parts. Advanced interval studies. *Prereq. 28.529 or equiv.*

### **28.531 Life and Works of J. S. Bach (2 q.h.)**

A comprehensive survey of the music and background of J. S. Bach with four areas of concentration: Bach and the figured bass; the young Bach (Baroque Romanticism); Bach, the churchman; Bach, the secular composer.

### **28.532 Life and Works of Mozart (2 q.h.)**

Mozart's mastery in all fields of music with particular emphasis on his development of the symphony and his achievements in opera. The man, as seen through his letters, as performer and composer.

### **28.533 Life and Works of Beethoven (2 q.h.)**

An analysis of the complex personality and art of this supreme musical genius. His relation to the turbulent times in which he lived; his role as the great transitional figure in the passage from Classicism to Romanticism. His psychological and aesthetic growth will be observed by studying similar forms written in different periods of his life.

### **28.534 Pedagogy of Music I (2 q.h.)**

Introduction to philosophy principles and procedures in the teaching of music.

### **28.535 Pedagogy of Music II (2 q.h.)**

Procedures, program planning, and techniques in teaching vocal and instrumental music. *Prereq. 28.534 or consent of instructor prior to registration.*

### **28.536 Pedagogy of Music III (2 q.h.)**

Methods, procedures, and materials of/for advanced vocal and instrumental

music instruction. *Prereq.* 28.534, 28.535 or consent of instructor prior to registration.

**28.540 The Black Artist in Music** (2 q.h.)

General survey of Afro-American music in the U.S. traced from its origins in Africa to the present. Emphasis on jazz, its history, and an analysis of the contributions of major innovative figures. Sources and origins of jazz, as well as their contemporary extensions will be studied. Intended to introduce the student to the vast and rich expanses of black musical culture, from both a musical and a socio-historical standpoint.

**28.541 Nationalism in Music** (2 q.h.)

The relationship of folk song, dance, and art to symphonic literature; nationalistic elements in the music of Dvorak, Tchaikovsky, Grieg, Copland, Shostakovich, Sibelius; the effect of ideology on composers; the Soviet composers.

**28.542 Music of the U.S.A.** (2 q.h.)

American music from the colonial times to the present, influence of Stravinsky and Schoenberg on American composers, music for the theater, jazz, electronic music, and contemporary music trends.

**28.543 Great Choral Literature** (2 q.h.)

A study of sacred and secular choral literature from medieval to contemporary times.

**28.544 Chamber Music** (2 q.h.)

Ensemble music for small groups. Examples for analysis are selected from the Baroque Period to contemporary styles.

**28.545 Wagner's Ring Cycle** (2 q.h.)

An in-depth study of Wagner's Cycle of music drama: Das Rheingold, Walkure, Siegfried Gotterdammerung. Wagner's compositional techniques (e.g., the use of leitmotif and musical metaphor) are examined in detail.

**28.546 Life and Work of Stravinsky** (2 q.h.)

Le Sacre, Petrouchka, Symphony of Psalms, and more recent works are given detailed attention. His contributions to twentieth-century style: neo-classicism, pandiatonicism, and additive style are analyzed, and his strong influence on other composers is noted.

**28.547 The Music of Bruckner and Mahler** (2 q.h.)

A study of their major works and aesthetic principles. Large-scale symphonic and vocal works will be examined as a culmination of nineteenth-century Romanticism and as the forerunners of twentieth-century Expressionism.

**28.548 Great Love Songs Through the Ages** (2 q.h.)

The music of love songs, ballads, chansons, lieder, and opera arias from the Middle Ages to today will be studied, listened to, and discussed.

**28.549 A History of Musical Instruments in Western Culture** (2 q.h.)

A study of the evolution of musical instruments from the Middle Ages to today.

General principles of instrument construction and the historical contexts of their use through the ages will be discussed. The evolution of changing tastes in instrumental sound will be illustrated through listening to recordings and, whenever possible, through live performance. Field trips to the Boston Museum of Fine Arts (which houses an excellent early instrument collection) and to various instrument builders in the Boston area will help give the student a firsthand view of some ancient and modern instruments.

**28.550 Life and Works of Haydn (2 q.h.)**

A study of his major works and aesthetic principles. Emphasis on Haydn's contributions to Symphonic form; his oratorios, masses, chamber music, songs, symphonies, and works for the keyboard.

**28.551 Life and Works of Brahms (2 q.h.)**

The Romantic-Classicalist; his technique of germinal motivic construction; a study of his symphonies, concertos, chamber music, the songs, and the Requiem.

**28.552 Life and Works of Chopin (2 q.h.)**

A comprehensive study of the pianoforte compositions of Chopin including the sonatas, concertos, and the shorter forms such as the waltzes, nocturnes, preludes, mazurkas, etudes, scherzos, polonaises, impromptus, and ballades.

**28.553 Melodrama and the Macabre: Aspects of Romanticism in Music (2 q.h.)**

The focus of this course is on program music of the Romantic period dealing with strange and macabre subjects. Works studied will include Schubert's *Erlkönig*, Weber's *Der Freischütz*, and Berlioz' *Symphonie Fantastique*. Investigations will be made into the forces which produced this aspect of Romanticism with references to literature and art and how they affected the musical scene.

**28.555 Contemporary Opera (2 q.h.)**

Almost every major composer including Schoenberg, Berg, Bartok, Stravinsky, Hindemith, and Poulenc have contributed to the opera repertory, thus illustrating twentieth-century style. Among the works studied are: *Wozzeck*, the *Rake's Progress*, *Dialogue of the Carmelites*, and *Bluebeard's Castle*.

**28.571 Piano Class I (2 q.h.)**

Fundamentals of music and interval identification. Scales and arpeggios, hands separate. Ear training through keyboard harmony and some emphasis on ensemble playing. Repertoire requirements, early Mozart minuets, etc.

**28.572 Piano Class II (2 q.h.)**

Scales and arpeggios, hands together. Primary triads in some major and minor keys for improvisation and ear playing. Sight playing and some duet performances. Repertoire: Anna Magdalena. Notebook by J. S. Bach. *Prereq.* 28.571 or equiv., or consent of instructor prior to registration.

**28.573 Piano Class III (2 q.h.)**

Scales and arpeggios, hands together (2 octaves). Primary triads in all keys adding secondary triads in some keys. Transposition of simple tunes, including The National Anthem, using own accompaniment in all keys. Sight playing,



Diller—Quaille Book II, Repertoire: *Complete Oxford Piano Course*. Prereq. 28.572 or equiv., or consent of instructor prior to registration.

**28.590 Directed Study** (2 q.h.)

Independent work under the direction of the department upon a chosen topic. (*Limited to qualified students with approval of department chairman.*) Prereq. Dept. approval.

**28.591 Off-Broadway Musical Seminar** (2 q.h.)

A survey of the music and forms of musicals other than the traditional Broadway show. New York, off-Broadway, and community theater will be studied. Specific off-Broadway musicals will be analyzed in depth.

**28.595 Opera Seminar** (2 q.h.)

An historical survey of opera. Students will attend performances of several operas and write critical reviews.

**28.597 Symphony Seminar** (2 q.h.)

An historical survey and analytic study of the symphony orchestra. Students will attend performances of several different symphony orchestras and write critical reviews.

**28.598 Musical Comedy Seminar** (2 q.h.)

An historical survey and analytic study of musical shows. Students will attend performances and write critical reviews.

**28.599 Theory I—Tonal Techniques A** (2 q.h.)

Fundamentals. Pitch and rhythmic notation, scales, intervals, chord construction. Basic ear training, melodic and rhythmic dictation.

**28.600 Theory II—Tonal Techniques B** (2 q.h.)

Chord progression. Realization of figured bass, voice leading, harmonic rhythm. Non-harmonic tones. Melodic and rhythmic dictation. Prereq. 28.599 or equiv. or consent of instructor prior to registration.

**28.601 Theory III—Eighteenth-Century Harmonic Practice** (2 q.h.)

Choral analysis. Seventh chords, secondary dominants, modulation. Melodic and rhythmic dictation. Prereq. 28.600 or equiv. or consent of instructor prior to registration.

**28.602 Music History I—Musical Literature to 1750** (2 q.h.)

A study of sacred and secular musical literature from the early Middle Ages through the Baroque. Listening to and discussion of monophony, organum, music of the troubadours and trouveres; motets, masses, and secular music by Machaut, Dufay, Josquin, Palestrina, Byrd; Elizabethan music, both vocal and instrumental; early Italian opera; music of the German protestants culminating in the works of Bach and Handel will give the student an evolutionary view of music history and style during this period.

**28.603 Music History II—Music of the Classical Period** (2 q.h.)

A study of changing musical styles from Stamitz, and the Mannheim School through the works of Haydn, Mozart, and early Beethoven.

**28.604 Music History III-Music of the Romantic Era (2 q.h.)**

Musical styles of the nineteenth century. The role of music and the musician in the changing social, economic, political, and cultural structure of Europe. Music by Beethoven, Schubert, Berlioz, Brahms, Verdi, and Wagner will be heard, discussed, and analyzed.

**28.605 Theory IV (2 q.h.)**

Non-dominant seventh, ninth, eleventh, and thirteenth chords. Linear embellishment of harmony and harmonization of melody. Keyboard harmony. Melodic and rhythmic dictation; part singing. *Prereq.* 28.601 or equiv. or consent of instructor prior to registration.

**28.606 Theory V (2 q.h.)**

Analysis of appropriate period forms and compositions. Chromatic and other non-diatonic harmony. Advanced modulation. Keyboard harmony. Melodic-rhythmic dictation and part singing. *Prereq.* 28.605 or equiv. or consent of instructor prior to registration.

**28.607 Theory VI (2 q.h.)**

Continuing analysis of compositions and period forms. Modern chord symbols. Basic principles of serial writing. Keyboard harmony. Melodic-rhythmic dictation and part singing. *Prereq.* 28.606 or equiv. or consent of instructor prior to registration.

**28.608 Contrapuntal Techniques I (2 q.h.)**

A study of sixteenth-century counterpoint. *Prereq.* 28.599 or equiv.

**28.609 Contrapuntal Techniques II (2 q.h.)**

A study of seventeenth- and eighteenth-century counterpoint. *Prereq.* 28.608 or equiv. or consent of instructor prior to registration.

**28.611 Musical Performance I (1 q.h.)**

Participation in rehearsals and public performances and/or research, composition, arranging, conducting, solo and ensemble activity, etc., with the NU Symphony Orchestra, the Early Music Players, the NU Chorus, the NU Bands, or other ensembles under the supervision and coaching of a faculty member of the Department of Music. The student's progress will be evaluated at the end of the quarter by audition or otherwise. *Prereq.* Audition or permission of instructor.

**28.612 Musical Performance II (1 q.h.)**

*Prereq.* Audition or permission of instructor.

**28.613 Musical Performance III (1 q.h.)**

*Prereq.* Audition or permission of instructor.

**28.614 Musical Performance IV (1 q.h.)**

*Prereq.* Audition or permission of instructor.

**28.695 Honors Program I (4 q.h.)**

*Prereq.* Permission of Dean.

**28.696 Honors Program II (4 q.h.)***Prereq.* 28.695.**28.697 Honors Program III (4 q.h.)***Prereq.* 28.696.**29—SPEECH AND THEATRE ARTS***Consultant:* Prof. E. J. Blackman, Chairman, Drama and Speech Dept. (L.A. College)**29.501 Effective Speaking I (2 q.h.)**

Selection and organization of speech materials, essentials of good platform delivery, individual and class criticism of both prepared and impromptu speeches. A practical course devoted to developing an ability to speak easily, naturally, and forcefully.

**29.502 Effective Speaking II (2 q.h.)**

This course builds upon the techniques and principles developed in Effective Speaking I by stressing increased student proficiency. Speech organization and delivery of more complex materials with which the student is likely to be confronted in business, industry, or the professions will be studied. *Prereq.* 29.501.

**29.503 Effective Speaking III (2 q.h.)**

The individual speaker as part of a group. The role of discussion in problem analysis, problem solving, and policy making. The principles and methods of organizing and participating in group discussions. Parliamentary procedure. *Prereq.* 29.502.

**29.504 Voice and Articulation I (2 q.h.)**

A practical course aimed at developing the speaking voice; special emphasis on articulation, pitch control, vocal variety, and flexibility; basic theory of the vocal mechanism.

**29.505 Voice and Articulation II (2 q.h.)**

Study of the science of speech sounds, investigation of regionalisms, individual voice development. *Prereq.* 29.504.

**29.506 Oral Interpretation (2 q.h.)**

Application of basic vocal techniques to the dramatic interpretation of various forms of literature.

**29.507 Business and Professional Speaking (2 q.h.)**

Practice in the organization and presentation of material to fit varying audiences. Emphasis on techniques of delivery and effective presentation of ideas.

**29.508 Argumentation and Discussion (2 q.h.)**

Designed to acquaint the student with the basic concepts of argumentation (evidence, research, refutation). Emphasis is placed on the psychology of an audience and various types of group discussion.

**29.509 Parliamentary Procedure (2 q.h.)**

Methods of conducting and organizing meetings. Development of effective leadership techniques. Experience in chairing a meeting and applying rules of order.

**29.511 Introduction to Theatre Arts (2 q.h.)**

A course aimed at developing in theatregoers an appreciation of the total theatre experience, by studying the roles played by the artists and craftsmen of the theatre in bringing the playwright's script to life. The role of the director, actors, and designers. The role of the audience as critics.

**29.521 Introduction to Dramatic Literature (2 q.h.)**

The relationship between drama as literature and as theatre. Types of drama: comedy, tragedy, melodrama, farce, and drawing-room comedy. The dramatist's attitude and his style: Classicism, Romanticism, Realism, Naturalism, and Theatricalism.

**29.522 Masters of the Theatre I (2 q.h.)**

The plays in relationship to their times, the theatres in which they were performed, and the dramatic theory of the age. An examination of selected plays from the Classical Greek and Roman, Medieval religious and secular, and Elizabethan theatre.

**29.523 Masters of the Theatre II (2 q.h.)**

The art of the Italian *commedia dell'arte*, the Neoclassic theatre of Racine, Moliere, and Dryden, the Restoration theatre, and the plays of Goldsmith and Sheridan.

**29.524 Modern European Drama (2 q.h.)**

An examination of European drama of the late nineteenth century and of the twentieth century reflecting the changing views toward the nature of man and the techniques of theatre.

**29.525 Modern British Drama (2 q.h.)**

The drama of England and Ireland of the twentieth century reflecting the impact of modern life upon modern theatre.

**29.526 Modern American Drama (2 q.h.)**

A view of American drama from 1900 to the present time. The American playwright reflecting the social, philosophical, and psychological temper.

**29.527 Interpersonal Communications I (2 q.h.)**

Ways of becoming more aware of self and one's relation to others. An exploration of various options for communicating and increasing one's knowledge of the group process. (enrollment limited)

**29.528 Interpersonal Communications II (2 q.h.)**

A continuation of 29.527. *Prereq.* 29.527. (enrollment limited)

**29.529 Interpersonal Communications III (2 q.h.)**

A continuation of 29.528. *Prereq.* 29.528. (enrollment limited)

**29.531 Contemporary Film (2 q.h.)**

A survey of world film from the days of Edison's experiments to the present. Evaluation and critical review of representative films. Viewing of outstanding films.

**29.535 Workshop in Play Production I (2 q.h.)**

Training for the beginning director of plays. The organization of the producing unit. Play selection. Casting. Script analysis. Production style. Creating the floor plan. Directing simple scenes in the proscenium theatre.

**29.536 Workshop in Play Production II (2 q.h.)**

Studying of composition and picturization. Rehearsal techniques. Directing of simple scenes. *Prereq.* 29.535.

**29.537 Workshop in Play Production III (2 q.h.)**

Directing in the arena theatre, as well as in proscenium theatre. *Prereq.* 29.536.

**29.541 Workshop for the Actor I (2 q.h.)**

Physical preparation. Basic stage movement and deportment; the control of the stage voice; the analysis and establishment of characterization through observation and awareness of the body; improvisations and short scenes.

**29.542 Workshop for the Actor II (2 q.h.)**

Psychological preparation. The analysis and establishment of characterization through memory, emotion, imagination, and recall. Analysis of specific roles, the creation of a character analysis book, improvisations and short scenes.

**29.543 Workshop for the Actor III (2 q.h.)**

Preparing and performing the role. The physical and psychological preparation of specific roles. Short classroom scenes; the presentation of a one-act play.

**29.550 The Comic Theatre (2 q.h.)**

An examination of the writing and the staging of works by Aristophanes, Moliere, Shaw, Neil Simon. The nature, the functions, the techniques of comic writing and comic performance.

**29.551 Of and By Women in the Theatre (2 q.h.)**

The changing role of women as reflected in plays about and by women.

**29.552 The Off-Broadway Theatre (2 q.h.)**

The playwrights, the performers, and the audience of contemporary Off-Broadway theatre.

**29.561 Announcing I (2 q.h.)**

A course dealing with the delivery of all types of radio commercials.

**29.562 Announcing II (2 q.h.)**

A course dealing with the delivery of prepared as well as ad lib materials so that the announcer may strengthen his spontaneous broadcast speech abilities. *Prereq.* 29.561.

**29.563 Announcing III (2 q.h.)**

A course dealing with a variety of ad lib program types in both radio and television to aid the announcer in developing his ability to think quickly and speak fluidly and dynamically. *Prereq.* 29.562.

**29.595 Charles Playhouse Seminar (2 q.h.)**

A seminar designed to teach students how to appreciate the experience of theatregoing through pre-show preparation and post-show critique, under the guidance of a faculty member as well as Charles Theatre artistic personnel.

**29.596 New York Theatre Seminar (2 q.h.)**

A seminar aimed at introducing the theatre arts to students by varied theatre-going experiences as well as formal class discussions, and studying the role of the New York stage in shaping contemporary American theatre.

**29.597 London Theatre Seminar (2 q.h.)**

Examination of the contemporary London theatre scene by viewing and evaluating representative productions.

**29.598 Stratford Shakespeare Seminar (2 q.h.)**

Seminar designed to give students an opportunity to attend four performances at the Stratford Festival Theatre: to meet with Festival actors, directors, designers; to tour the theatre plant; and to evaluate contemporary Shakespearian productions.

**29.599 Creative Dramatics**

Theories and methods of relating the creative techniques of pantomime, improvisations, dramatization; and to work with children's programs in schools, churches, recreation facilities.

**29.600 Children's Theatre**

Analysis and creation of dramatic literature for children; the developing of a production for children.

### 30—ENGLISH

*Consultant:* Prof. P. C. Wermuth, Chairman, English Dept. (L.A. College)

*Assoc. Consultants:* Dean H. Vetstein (L.A. College); Prof. M. Lesser (L.A. College)

*Each student enrolled in Composition and Rhetoric (30.601 and 30.603) will take a Placement Examination during class. Some students may be requested to register for Elements of Composition (30.600), a 2 q.h. course designed to upgrade the student's background.*

Courses required for Liberal Arts Majors are:

**30.601, 30.602 Composition and Rhetoric I & II (or 30.603 Intensive)**

and

**30.604, 30.605 Introduction to Literary Forms I & II (or 30.606 Intensive)**

For other majors, refer to English requirement listed under major.

*During the changeover of English requirements, the following will apply:*

*Students who have successively completed:*

*30.504 may register for 30.602*

*30.505 may register for 30.604*

*30.507 may register for 30.605*

**30.501 English for International Students I** (2 cl., non-credit)

Introduction to English grammar for foreign-speaking students with an emphasis on listening, speaking, and writing; selected readings and exercises to strengthen vocabulary and pronunciation.

**30.502 English for International Students II** (2 cl., non-credit)

A continuation of 30.501 emphasizing the preparation of written and oral reports, and business and social correspondence.

**30.503 English for International Students III** (2 cl., non-credit)

Advanced work in written and spoken English preparatory to entering 30.601, Composition and Rhetoric I.

**30.511 Business Writing and Reports I** (2 q.h.)

Developing an appropriate vocabulary and a business letter-writing philosophy.

**30.512 Business Writing and Reports II** (2 q.h.)

Planning, writing, and analyzing effective business letters. *Prereq. 30.511 or equiv.*

**30.513 Business Writing and Reports III** (2 q.h.)

Researching, organizing, documenting, and writing semi-technical and business reports. *Prereq. 30.512 or equiv.*

**30.514 Technical Writing I** (2 q.h.)

Introduction to types of technical documentation, memoranda, and technical reports. Writing of reports. *Prereq. 30.506 or equiv.*

**30.515 Technical Writing II** (2 q.h.)

Proposals, technical manuals, and graphic aids for printed documents and presentations. *Prereq. 30.514 or equiv.*

**30.516 Technical Writing III** (2 q.h.)

Technical writing, editing, and documentation, including information retrieval, programmed instruction, and reproduction processes. *Prereq. 30.515 or equiv.*

**30.517 Intermediate Writing** (2 q.h.)

Practice in expository and imaginative writing in a variety of forms, designed to help the student discover his own style. Individual attention to the student's work. *Prereq. 30.506, 30.602 or equiv.*

**30.518 Creative Writing I (2 q.h.)**

A workshop in writing short fiction. *Prereq. 30.517 or equiv.*

**30.519 Creative Writing II (2 q.h.)**

A workshop in analyzing and editing the participants' short fiction. *Prereq. 30.518 or equiv.*

**30.522 Introduction to Semantics I (2 q.h.)**

The effect of language habits on thinking processes and on social relationships. *Prereq. 30.506, 30.509, or equiv.*

**30.523 Introduction to Semantics II (2 q.h.)**

A formulaic examination of language. *Prereq. 30.522 or equiv.*

**30.525 The English Language I (2 q.h.)**

An introduction to the scientific study of the backgrounds and historical development of the English language. *Prereq. 30.506, 30.509, or equiv.*

**30.526 The English Language II (2 q.h.)**

An examination of sounds, grammar, and usage. *Prereq. 30.525 or equiv.*

**30.527 The English Language III (2 q.h.)**

The problem of meaning and the symbolic nature of language. *Prereq. 30.526 or equiv.*

**30.531 Western World Literature I (2 q.h.)**

The Classical Age.

**30.532 Western World Literature II (2 q.h.)**

The Bible and the Middle Ages.

**30.533 Western World Literature III (2 q.h.)**

The Renaissance.

**30.534 Western World Literature IV (2 q.h.)**

The Neoclassical Age.

**30.535 Western World Literature V (2 q.h.)**

The Enlightenment.

**30.536 Western World Literature VI (2 q.h.)**

The Romantic Age and the rise of Realism.

**30.537 Modern Irish Literature I (2 q.h.)**

Irish literature in English from 1885 to 1920 (fiction, drama, and verse). Concentration will be on such major figures as the early Yeats, Synge, Lady Gregory, O'Flaherty, and the early Joyce.

**30.538 Modern Irish Literature II (2 q.h.)**

Irish literature in English from 1920 to the present (fiction, drama, and verse). Concentration will be on such major figures as the later Yeats, O'Casey, O'Faolain, the later Joyce, O'Connor, Behan, Lavin, and Montague.



**30.539 The Irish Influence in Selected Modern American Literature** (2 q.h.)

A survey of the Irish imagination, themes, and attitudes as embodied in the fiction and drama of a number of twentieth-century American writers: O'Neill's "Touch of the Poet," Donleavy's "Ginger Man," O'Connor's "Last Hurrah," Alfred's "Hogan's Goat," and McHale's "Farragan's Retreat." (*Partially fulfills American Literature requirement for majors*).

**30.541 English Literature I** (2 q.h.)

From early English to 1700.

**30.542 English Literature II** (2 q.h.)

From Neoclassicism to Romanticism.

**30.543 English Literature III** (2 q.h.)

From the Victorian Age to the present.

**30.544 American Literature I** (2 q.h.)

From Colonial times to Poe.

**30.545 American Literature II** (2 q.h.)

The American Renaissance: Emerson, Thoreau, Hawthorne, Melville, and Whitman.

**30.546 American Literature III** (2 q.h.)

From 1865 to the present.

**30.547 Science Fiction** (2 q.h.)

The myths and rhetorical strategies of science fiction from Mary Shelley's *Frankenstein* through such authors as Vonnegut, Bradbury, Heinlein, and Clarke.

**30.548 Images of Women in Literature** (2 q.h.)

A descriptive and analytic study of the images of women and the archetypes underlying them in imaginative literature, including such writers as Homer, Austen, Ibsen, Lawrence, Mailer, and Plath.

**30.551 Chaucer I** (2 q.h.)

"The Canterbury Tales," with attention to Middle English vocabulary, historical setting, and the rhythms and devices of Chaucer's poetry.

**30.552 Chaucer II** (2 q.h.)

More of "The Canterbury Tales," and a beginning in the text of "Troilus and Criseyde." *Prereq. 30.551 or equiv.*

**30.553 Chaucer III** (2 q.h.)

An emphasis on "Troilus and Criseyde," and on certain shorter works of Chaucer. *Prereq. 30.552 or equiv.*

**30.554 Shakespeare I** (2 q.h.)

The Elizabethan theatre, Shakespeare's England, and the pre-1600 plays.

**30.555 Shakespeare II** (2 q.h.)

The "problematical" comedies and the histories. *Prereq. 30.554 or equiv.*

**30.556 Shakespeare III (2 q.h.)**

Emphasis on the major tragedies of Shakespeare. *Prereq. 30.555 or equiv.*

**30.557 The Seventeenth Century (2 q.h.)**

The literature of the Restoration.

**30.558 The Eighteenth Century I (2 q.h.)**

The age of Pope and Swift.

**30.559 The Eighteenth Century II (2 q.h.)**

The age of Johnson.

**30.561 Spenser (2 q.h.)**

"The Faerie Queene," studied as the English culmination of Medieval and Renaissance romantic narrative.

**30.562 Milton (2 q.h.)**

Close reading of "Paradise Lost," and of such political and theological background as needed. "Samson Agnoistes" will also be read.

**30.564 The Old Testament I (2 q.h.)**

Selected books from the Old Testament examined for their literary and historical importance.

**30.565 The Old Testament II (2 q.h.)**

Continuation of 30.564.

**30.566 The New Testament (2 q.h.)**

Selected books from the New Testament considered in their literary and historical aspects.

**30.571 The Nineteenth Century I (2 q.h.)**

Wordsworth and Coleridge.

**30.572 The Nineteenth Century II (2 q.h.)**

Byron, Shelley, and Keats.

**30.573 The Nineteenth Century III (2 q.h.)**

The Victorian Age.

**30.574 The Eighteenth-Century English Novel (2 q.h.)**

From Defoe to Austen.

**30.575 The Nineteenth-Century English Novel (2 q.h.)**

From Bronte to Hardy.

**30.576 The Twentieth-Century English Novel (2 q.h.)**

From Conrad to the present.

**30.577 Conrad (2 q.h.)**

Conrad's art related to his Polish heritage, nautical career, theory of life and composition, and literary legacy.

**30.578 Afro-American Literature** (2 q.h.)

A study of representative black authors of the United States, emphasizing the period from the Civil War to the present.

**30.581 The American Short Story** (2 q.h.)

The development of the American short story from its nineteenth-century origins to the present.

**30.582 The Nineteenth-Century American Novel** (2 q.h.)

From Cooper to Crane.

**30.583 The Twentieth-Century American Novel** (2 q.h.)

From Dreiser to the present.

**30.584 Contemporary American Poetry** (2 q.h.)

From Frost to the present.

**30.585 The Modern European Novel** (2 q.h.)

From Proust to the present.

**30.586 Literary Criticism** (2 q.h.)

Major schools of criticism through a study of Aristotle, Longinus, Sidney, Johnson, and a representative group of moderns.

**30.590 Writers' Conference** (2 q.h.)

A workshop in which professional writers will analyze participants' manuscripts.

**30.591 Honors Program I** (4 q.h.)

See page 86.

**30.592 Honors Program II** (4 q.h.)

Prereq. 30.591.

**30.593 Honors Program III** (4 q.h.)

Prereq. 30.592.

**30.600 Element of Composition** (2 q.h.)

An intensive study of grammatical forms and structural patterns of current English.

**30.601 Composition and Rhetoric I** (2 q.h.)

A detailed examination of the modes of rhetoric, especially exposition and argument, and exercises in the development of paragraphs and short papers. (*Not open to students who have credit for 30.504.*)

**30.602 Composition and Rhetoric II** (2 q.h.)

A continuation of 30.601. The stress here is on the short paper, the longer library paper, and formal documentation. (*Not open to students who have credit for 30.505.*)

**30.603 Composition and Rhetoric (Intensive)** (4 q.h.)

Same as 30.601 plus 30.602.

**30.604 Introduction to Literary Forms I (2 q.h.)**

The development of techniques for reading imaginative writing. Short and long fiction are the materials for study, discussion, and two critical papers.

**30.605 Introduction to Literary Forms II (2 q.h.)**

A continuation of 30.604, but here the materials are poetry and drama.

**30.606 Introduction to Literary Forms (Intensive) (4 q.h.)**

Same as 30.604 *plus* 30.605.

**30.607 The Modern Novel (2 q.h.)**

An introductory course in the structure and themes of twentieth-century American, British, and European novels; reading of such writers as Hemingway, and Faulkner, Joyce and Lawrence, Kafka and Camus.

## 31—FRENCH

*Consultant:* Prof. L. Cooperstein, Chairman, Modern Language Dept. (L.A. College)

**31.601 Elementary French I (4 q.h.)**

Essentials of grammar, practice in pronunciation, and progressive acquisition of a basic vocabulary and idiomatic expressions.

**31.602 Elementary French II (4 q.h.)**

Continuation of grammar study. Oral and written exercises. *Prereq.* 31.601 or *equiv.*

**31.603 Elementary French III (4 q.h.)**

Reading of French prose of increasing difficulty, with written and oral exercises based on the materials read; practice in conversation. *Prereq.* 31.602 or *equiv.*

**31.604 Intermediate French I (4 q.h.)**

A review of grammar, with practice in composition and conversation. *Prereq.* 31.603 or *equiv.*

**31.605 Intermediate French II (4 q.h.)**

History of French civilization, with discussions and conversation. *Prereq.* 31.604 or *equiv.*

**31.606 Intermediate French III (4 q.h.)**

Intensive reading of modern French prose, with conversational practice. *Prereq.* 31.605 or *equiv.*

**31.607 Elementary French (Intensive) (12 q.h.)**

Stresses the essentials of grammar, practice in pronunciation, and progressive acquisition of a basic vocabulary with idiomatic expressions. Written and oral exercises are based upon simple French prose. Develops into the reading of more difficult work accompanied by practice in conversation. (*Not open to students who have taken 31.601, 31.602, 31.603.*)

**31.608 Intermediate French (Intensive)** (12 q.h.)

Same as 31.604, 31.605 and 31.606. (*Not open to students who have taken 31.604, 31.605, 31.606.*)

**31.521. French Literature I** (2 q.h.)

Origins of French literature with readings from major works of the Middle Ages. *Prereq. 31.506 or equiv.*

**31.522 French Literature II** (2. q.h.)

Selections from the Classical period in the seventeenth and eighteenth centuries. *Prereq. 31.521 or equiv.*

**31.523 French Literature III** (2 q.h.)

Readings from major works of the nineteenth and twentieth centuries. *Prereq. 31.522 or equiv.*

**32—SPANISH****32.601 Elementary Spanish I** (4 q.h.)

Essentials of grammar, practice in pronunciation, progressive acquisition of a basic vocabulary and idiomatic expressions.

**32.602 Elementary Spanish II** (4 q.h.)

Continuation of grammar study. Oral and written exercises; reading of Spanish prose of moderate difficulty. *Prereq. 32.601 or equiv.*

**32.603 Elementary Spanish III** (4 q.h.)

Continuation of grammar study. Oral and written exercises; reading of Spanish prose of moderate difficulty. *Prereq. 32.602 or equiv.*

**32.607 Elementary Spanish (Intensive)** (12 q.h.)

Stresses the essentials of grammar, practice in pronunciation, and progressive acquisition of a basic vocabulary with idiomatic expressions. Written and oral exercises are based upon simple Spanish prose. Develops into the reading of more difficult work accompanied by practice in conversation. (*Not open to students who have taken 32.601, 32.602, 32.603.*)

**32.604 Intermediate Spanish I** (4 q.h.)

Review of grammar, with practice in composition and conversation. *Prereq. 32.603, 32.611 or equiv.*

**32.605 Intermediate Spanish II** (4 q.h.)

Spanish civilization through texts of average difficulty. Intensive reading of modern prose, with occasional oral or written translation; conversation practice based on assigned readings. *Prereq. 32.604 or equiv.*

**32.606 Intermediate Spanish III** (4 q.h.)

Spanish-American civilization through texts of average difficulty. Intensive reading of modern prose, with occasional oral or written translation; conversation practice based on assigned readings. *Prereq. 32.605 or equiv.*

**32.608 Intermediate Spanish (Intensive)** (12 q.h.)

Same as 32.604, 32.605 and 32.606. (*Not open to students who have had 32.604, 32.605, 32.606.*)

**32.609 Conversational Spanish I\*** (4 q.h.)

This course is intended to provide students with a basic speaking ability and understanding of everyday Spanish. (*No previous background needed.*)

**32.610 Conversational Spanish II\*** (4 q.h.)

Continued building of basic skills in conversational Spanish. *Prereq.* 32.609 *or equiv.*

**32.611 Conversational Spanish III\*** (4 q.h.)

A continuation of 32.610 *Prereq.* 32.610 *or equiv.*

**32.621 Spanish Literature I** (2 q.h.)

Origins of Spanish literature with readings from major works of the Middle Ages, the Romancero, and Mysticism. *Prereq.* 32.606 *or equiv.*

**32.622 Spanish Literature II** (2 q.h.)

Selections from Cervantes and other major figures of the Siglo de Oro. *Prereq.* 32.621 *or equiv.*

**32.623 Spanish Literature III** (2 q.h.)

Readings from major works of the nineteenth and twentieth centuries. *Prereq.* 32.622 *or equiv.*

### 33—GERMAN

**33.601 Elementary German I** (4 q.h.)

Essentials of grammar; practice in pronunciation; progressive acquisition of a basic vocabulary and idiomatic expressions.

**33.602 Elementary German II** (4 q.h.)

More difficult points of grammar—particularly uses of subjunctive mood. *Prereq.* 33.601 *or equiv.*

**33.603 Elementary German III** (4 q.h.)

Reading of simple German prose, with oral and written exercises based on material read; German conversation encouraged. *Prereq.* 33.602 *or equiv.*

**33.604 Intermediate German I** (4 q.h.)

A review of grammar, with practice in composition and conversation. *Prereq.* 33.603 *or equiv.*

**33.605 Intermediate German II** (4 q.h.)

History of German civilization, with discussions and conversation. *Prereq.* 33.604 *or equiv.*

\*Will satisfy the elementary language requirement only.

**33.606 Intermediate German III (4 q.h.)**

Intensive reading of modern German prose, with conversational practice.

*Prereq.* 33.605 or *equiv.*

## 34—RUSSIAN

**34.601 Elementary Russian I (4 q.h.)**

Essentials of grammar; practice in pronunciation and progressive acquisition of a base vocabulary; idiomatic expressions.

**34.602 Elementary Russian II (4 q.h.)**

Continuation of grammar study; oral and written exercises. *Prereq.* 34.601 or *equiv.*

**34.603 Elementary Russian III (4 q.h.)**

Reading of Russian prose of moderate difficulty. *Prereq.* 34.602 or *equiv.*

**34.604 Intermediate Russian I (4 q.h.)**

Graded reading from the works of Pushkin, Lermontov, and Turgenev; oral and written practice based on the covered material. *Prereq.* 34.603 or *equiv.*

**34.605 Intermediate Russian II (4 q.h.)**

Russian history and civilization through texts of average difficulty; oral practice and composition based on covered material. *Prereq.* 34.604 or *equiv.*

**34.606 Intermediate Russian III (4 q.h.)**

Russian history and civilization through texts of average difficulty; oral practice and composition based on covered material. *Prereq.* 34.605 or *equiv.*

## 34—JAPANESE

**34.621 Elementary Japanese I (4 q.h.)**

Essentials of grammar; practice in pronunciation and progressive acquisition of a basic vocabulary; idiomatic expressions.

**34.622 Elementary Japanese II (4 q.h.)**

Continuation of grammar study; oral and written exercises. *Prereq.* 34.621 or *equiv.*

**34.623 Elementary Japanese III (4 q.h.)**

Reading of Japanese prose of moderate difficulty. *Prereq.* 34.622 or *equiv.*

**34.624 Intermediate Japanese I (4 q.h.)**

Review of grammar, with practice in composition and conversation. *Prereq.* 34.623 or *equiv.*

**34.625 Intermediate Japanese II (4 q.h.)**

Japanese history and civilization through texts of average difficulty; oral practice and composition based on covered material. *Prereq.* 34.624 or *equiv.*

**34.626 Intermediate Japanese III (4 q.h.)**

Japanese history and civilization through texts of average difficulty; oral practice and composition based on covered material. *Prereq. 34.625 or equiv.*

**34—ITALIAN****34.631 Elementary Italian I (4 q.h.)**

Essentials of grammar; practice in pronunciation; and progressive acquisition of a basic vocabulary and idiomatic expressions.

**34.632 Elementary Italian II (4 q.h.)**

Continuation of grammar study. Oral and written exercises. *Prereq. 34.631 or equiv.*

**34.633 Elementary Italian III (4 q.h.)**

Reading of Italian prose of increasing difficulty; with written and oral exercises based on the material read; practice in conversation. *Prereq. 34.632 or equiv.*

**34.634 Intermediate Italian I (4 q.h.)**

A review of grammar, with practice in composition and conversation. *Prereq. 34.633 or equiv.*

**34.635 Intermediate Italian II (4 q.h.)**

History of Italian civilization with discussions and conversation. *Prereq. 34.634 or equiv.*

**34.636 Intermediate Italian III (4 q.h.)**

Intensive reading of modern Italian prose, with conversational practice. *Prereq. 34.635 or equiv.*

**34—SWAHILI****34.641 Elementary Swahili I (4 q.h.)**

Essentials of grammar; practice in pronunciation and progressive acquisition of a basic vocabulary; idiomatic expressions.

**34.642 Elementary Swahili II (4 q.h.)**

Continuation of grammar study; oral and written exercises. *Prereq. 34.641 or equiv.*

**34.643 Elementary Swahili III (4 q.h.)**

Reading of Swahili prose of moderate difficulty. *Prereq. 34.642 or equiv.*

**34.644 Intermediate Swahili I (4 q.h.)**

Review of grammar, with practice in composition and conversation. *Prereq. 34.643 or equiv.*

**34.645 Intermediate Swahili II (4 q.h.)**

Swahili history and civilization through texts of average difficulty; oral practice and composition based on covered material. *Prereq. 34.644 or equiv.*



**34.646 Intermediate Swahili III (4 q.h.)**

Swahili history and civilization through texts of average difficulty; oral practice and composition based on covered material. *Prereq.* 34.645 or *equiv.*

**34—CHINESE****34.651 Mandarin Chinese I (4 q.h.)**

An introduction to sounds and structure of spoken and written Chinese (the standard or "national language"—*kuo-yu*). Stresses essentials of grammar, sentence pattern drills.

**34.652 Mandarin Chinese II (4 q.h.)**

Continuation of Chinese I. Essentials of grammar, reading of simple written Chinese. *Prereq.* 34.651 or *equiv.*

**34.653 Mandarin Chinese III (4 q.h.)**

Continuation of Chinese II. Grammar, reading Chinese with conversational drill to be based on material covered in class. *Prereq.* 34.652 or *equiv.*

**38—JOURNALISM**

*Consultant:* Prof. G. A. Speers, Chairman, Journalism Dept. (L.A. College)

**38.501 History and Principles of Journalism I (2 q.h.)**

Journalism from its European origins into the Colonial period. The evolution of press freedoms and principles now and in the Colonial press and the party press.

**38.502 History and Principles of Journalism II (2 q.h.)**

Journalism from 1800. The "Dark Period," the "Penny Press," and the great personal journalists: Bryant, Bennett, Greeley, Raymond, and others. *Prereq.* 38.501 or *equiv.*

**38.503 History and Principles of Journalism III (2 q.h.)**

The "giants" of American journalism in the closing decades of the nineteenth century: Dana, Greeley, Ochs, White, Medill, Pulitzer, Hearst, and others. *Prereq.* 38.502 or *equiv.*

**38.504 Newswriting I (2 q.h.)**

Obtaining and organizing facts; the writing of basic news stories. Subjects covered include the five "W's" and the "H" of news, inverted pyramid form, news values, and leads.

**38.505 Newswriting II (2 q.h.)**

Analysis of different types of news stories through assignments and class discussions; building news stories; news interview stories, and other types. *Prereq.* 38.504.

**38.506 Newswriting III (2 q.h.)**

Investigative reporting, feature stories, editorials. Copyediting exercises and assignments in specialized writing. Libel, slander, and other legal matters affecting journalism. *Prereq.* 38.505 or *equiv.*

**38.507 Techniques of Journalism I (2 q.h.)**

Techniques of journalism, stressing actual assignments and classroom discussion of students' work. Course applies basic newswriting practices to assignments. *Prereq.* 38.506 or *equiv.*

**38.508 Techniques of Journalism II (2 q.h.)**

Focus on handling stories that emanate from various "beats," including courts and government beats; and investigative reporting. *Prereq.* 38.507 or *equiv.*

**38.509 Techniques of Journalism III (2 q.h.)**

Concentration on fields of "specialities" of business, sports, editorials, and student development of a special project in journalism. *Prereq.* 38.508 or *equiv.*

## 39—ECONOMICS

*Consultant:* Prof. M. A. Horowitz, Chairman, Economics Dept. (L.A. College)

*Associate Consultant:* Prof. H. Goldstein (L.A. College)

**39.501 Economic Principles and Problems I (2 q.h.)**

Macro analysis—national income concepts and determination; macro economic goals and problems; monetary and fiscal policy.

**39.502 Economic Principles and Problems II (2 q.h.)**

Micro analysis—theory of the firm and market structure; supply, demand, market price; international economics. *Prereq.* 39.501 or *equiv.*

**39.503 Economic Principles and Problems III (2 q.h.)**

Applications of economic principles to selected problem areas: poverty, competition, labor, agriculture, urban. *Prereq.* 39.502 or *equiv.*

**39.504 Economics (Intensive) (6 q.h.)**

Macro analysis—national income concepts and determination; macro economic goals and problems; monetary and fiscal policy. Micro analysis—theory of the firm and market structure; supply, demand, market price; international economics. Applications of economic principles to selected problem areas: poverty, competition, labor, agriculture, urban. (*Not open to students who have taken 39.501, 39.502, 39.503.*)

**39.505 Economics A (3 q.h.)**

Same as 39.501 plus the first half of 39.502.

**39.506 Economics B (3 q.h.)**

Same as the second half of 39.502 plus 39.503. *Prereq.* 39.505 or *equiv.*

**39.507 Intermediate Economic Theory I (2 q.h.)**

Classical equilibrium theory. Theory of demand, supply, and the market price. Marginal analysis. *Prereq.* 39.503 or *equiv.*

**39.508 Intermediate Economic Theory II (2 q.h.)**

Determination of price and output in the context of the theory of the firm.  
*Prereq.* 39.507 or *equiv.*

**39.509 Intermediate Economic Theory III (2 q.h.)**

Introduction to mathematical analysis and a comprehensive analysis of the theory of distribution. *Prereq.* 39.508 or *equiv.*

**39.511 Statistics I (2 q.h.)**

Introduction to the collection and organization of data. Concentration on the nature, computation, and uses of measures of central tendency and variability.  
*Prereq.* 39. 503 or *equiv.*

**39.512 Statistics II (2 q.h.)**

Introduction to statistical inference, parameters of samples, tests of significance, "t" distribution, and chi square. *Prereq.* 39.511 or *equiv.*

**39.513 Statistics III (2 q.h.)**

Introduction to the analysis of variance, trend fitting, linear regression, seasonal adjustment, and index numbers. *Prereq.* 39.512 or *equiv.*

**39.514 Statistics (Intensive) (6 q.h.)**

Introduction to the collection and organization of data. Concentration on the nature, computation, and uses of measures of central tendency and variability. Introduction to statistical inference, parameters of samples, tests of significance, "t" distribution, and chi square. Introduction to the analysis of variance, trend fitting, linear regression, seasonal adjustment, and index numbers. (*Not open to students who have taken 39.511, 39.512, 39.513.*) *Prereq.* 39.503 or *equiv.*

**39.517 Money and Banking I (2 q.h.)**

Introduction to money and credit, commercial banking structure, and money creation; problems and policy of central banking in the United States. *Prereq.* 39.503 or *equiv.*

**39.518 Money and Banking II (2 q.h.)**

Theory of money and prices and monetary policy; interest theory, debt management, and international monetary problems and analysis. *Prereq.* 39.517 or *equiv.*

**39.519 Public Finance (2 q.h.)**

Analysis of the growth and development of the public sector of the economy. Public finance policies, intergovernment fiscal relations. *Prereq.* 39.518 or *equiv.*

**39.521 Economic Growth and Development I (2 q.h.)**

Analysis of the development of the Western market system. Introduction to economic growth and alternative approaches to economic development.  
*Prereq.* 39.503 or *equiv.*

**39.522 Economic Growth and Development II (2 q.h.)**

An introductory analysis of the role of economic factors and institutions as

well as an examination of the effect of psychological social and political influences upon economic development. *Prereq.* 39.521 or *equiv.*

**39.523 Government and Business I** (2 q.h.)

Role of Government in national economic affairs—theory and practice. *Prereq.* 39.503 or *equiv.*

**39.524 Government and Business II** (2 q.h.)

The relationship between government and business and anti-trust laws. *Prereq.* 39.523 or *equiv.*

**39.525 American Economic History** (2 q.h.)

Economic development of the United States with emphasis upon the post Civil War period and selected European developments. *Prereq.* 39.503 or *equiv.*

**39.526 Government and Business III** (2 q.h.)

Application of anti-trust laws to business—emphasis upon cases, principles, and current anti-trust problems. *Prereq.* 39.524 or *equiv.*

**39.527 Labor Economics** (2 q.h.)

Development of labor organizations, their aims and methods. Issues in collective bargaining and public policy toward labor. *Prereq.* 39.503 or *equiv.*

**39.528 International Economics I** (2 q.h.)

Economics of international trade, tariffs and resource use, and balance of payments mechanisms. *Prereq.* 39.503 or *equiv.*

**39.529 International Economics II** (2 q.h.)

International commercial policy, financial organizations, and recent problems. *Prereq.* 39.528 or *equiv.*

**39.530 Comparative Economic Systems** (2 q.h.)

Analysis and evaluation of different economic systems: capitalism, socialism, communism, and fascism. *Prereq.* 39.503 or *equiv.*

**39.531 Business Cycles I** (2 q.h.)

Intermediate macro economic theory. Theory of cyclical fluctuations in the context of multiplier and accelerator models. *Prereq.* 39.503 or *equiv.*

**39.532 Business Cycles II** (2 q.h.)

Business cycle analysis, measurement, and public policy. *Prereq.* 39.531 or *equiv.*

**39.533 Business Cycles III** (2 q.h.)

Business cycle forecasting methods and services. *Prereq.* 39.532 or *equiv.*

**39.536 Advanced Statistics I** (2 q.h.)

Advanced topics in sampling and statistical inference as a management aid. *Prereq.* 39.503, 39.513 or *equiv.*

**39.537 Advanced Statistics II (2 q.h.)**

Elements in probability theory and the decomposition of economic change into secular, seasonal, and cyclical variation. *Prereq.* 39.536 or *equiv.*

**39.538 Advanced Statistics III (2 q.h.)**

Advanced topics in statistical inference, regression, and correlation and index numbers. *Prereq.* 39.537 or *equiv.*

**39.539 Managerial Economics (2 q.h.)**

An application of the theory of demand, price, and output to the business firm and capital budgeting. *Prereq.* 39.503 or *equiv.*

**39.540 History of Economic Thought (2 q.h.)**

Development of economic theory through Keynesian and post-Keynesian analysis. *Prereq.* 39.503 or *equiv.*

**39.551 Industrial Organization (2 q.h.)**

An extension and application of micro-theory to structure and performance of American industry. Anti-trust policy and analysis. *Prereq.* 39.503 or *equiv.*

**39.561 Urban Economics (2 q.h.)**

A study of urban affairs in the context of economic principles. *Prereq.* 39.503 or *equiv.*

**39.571 European Economic History (2 q.h.)**

An analysis of European economic affairs after the industrial revolution. The twentieth century and recent integration policies and their analysis. *Prereq.* 39.503 or *equiv.*

**39.581 Economic Policy Seminar (2 q.h.)**

Capstone course for senior majors with stress upon independent study and contemporary issues. *Prereq.* 39.509, 39.531, or *equiv.*

## 40—LIBRARY SCIENCE

*Consultant:* Mr. Frank Seegraber, Boston College

**40.501 Introduction to Library Science (2 q.h.)**

Brief survey of the history of books and librarianship. The development of libraries in the United States with some emphasis on recent federal and state library legislation. The library profession, its philosophy, publications, and organizations.

**40.502 Selection of Library Materials (2 q.h.)**

Principles and practices in the selection of multi-media materials for the modern library; bibliographic aids to selection; practice in preparation of book notes and book reviews.

**40.511 Organization of the Library (2 q.h.)**

The organization, administration, and services of municipal libraries; public

library systems in the United States; the role of public libraries as educational institutions.

**40.512 Multi-Media Centers** (Formerly Building and Administering the School Library) (2 q.h.)

Organization and management of elementary and secondary school libraries; problems in the selection and evaluation of multi-media materials necessary to the school curriculum.

**40.513 Administration of Multi-Media Centers** (Formerly School Library Administration) (2 q.h.)

The library as a media center for instructional materials; problems in personnel and budgeting; the library's role in the school curriculum and its services to students and faculty.

**40.514 Multi-Media Materials and Services** (Formerly Audio-Visual Materials and Services) (2 q.h.)

The selection, organization, and use of multi-media materials in school libraries; types of equipment and services; cataloging of non-print materials.

**40.521 Introduction to Reference Materials and Methods** (2 q.h.)

The basic tools and methods for locating information. Evaluation of dictionaries, encyclopedias, gazetteers and atlases, handbooks, almanacs, directories, and indexes.

**40.522 Reference Work in The Social Sciences** (2 q.h.)

Scope and use of outstanding reference materials in the broad range of the social sciences—economics, education, political science, sociology, and allied fields. *Prereq.* 40.521 or equiv.

**40.523 Reference Work in The Humanities** (2 q.h.)

Development of the book, and the beginnings of enumerative and descriptive bibliography. Approaches to the solution of reference problems in the humanities, with special emphasis on literature. *Prereq.* 40.521 or equiv.

**40.526 Library Community Relations** (2 q.h.)

An exploration of creative approaches and practical techniques for reaching individuals and groups with dynamic library science. Emphasis on modern public relations methods and media.

**40.531 Descriptive Cataloging** (2 q.h.)

Theory and practice of descriptive cataloging, introducing techniques of compiling author, corporate, and serial entries.

**40.532 Subject Headings and Classification** (Formerly Descriptive Cataloging and Classification) (2 q.h.)

Introduction to Dewey Decimal Classification and Sears subject headings; further study of descriptive cataloging in book and non-book materials. *Prereq.* 40.531 or equiv.

**40.533 Library of Congress Classification (2 q.h.)**

The significant differences between LC and Dewey. Notes on original cataloging and techniques of classification within the LC scheme. Use of LC outlines and tables. *Prereq. 40.531 or equiv.*

**40.541 Introduction to Children's Literature (2 q.h.)**

The history of children's literature; current trends in its publication and social forces that influence its production; criteria for evaluation and aids for selection of types of children's books.

**40.542 Library Service to Young People (2 q.h.)**

Study of adolescent needs in the field of literature with application to both public and school libraries; special attention to the problem of material selection, book talks, and discussion groups.

**40.533 Library of Congress Classification (2 q.h.)**

The significant differences between LC and Dewey. Notes on original cataloging and techniques of classification within the LC scheme. Use of LC outlines and tables. *Prereq. 40.531 or equiv.*

**40.541 Introduction to Children's Literature (2 q.h.)**

The history of children's literature; current trends in its publication and social forces that influence its production; criteria for evaluation and aids for selection of types of children's books.

**40.542 Library Service to Young People (2 q.h.)**

Study of adolescent needs in the field of literature with application to both public and school libraries; special attention to the problem of material selection, book talks, and discussion groups.

## BUSINESS ADMINISTRATION

All course descriptions carry an indication of which quarter(s) a particular course will be offered. Any course sequence not reporting an indication will have Part I offered in the Fall, Part II in the Winter, and Part III in the Spring Quarter. The campus availability of courses is also indicated after the description. Please refer to the Schedule of Courses and Registration Guide for details.

## 41—ACCOUNTING

*Consultant:* Prof. J. W. Golemme (College of Business Admin.) 437-3244

*Coordinator:* C. P. Carter, Asst. Prof. (College of Business Admin.) 437-3245

**41.501 Accounting Principles I (2 q.h.) (Offered every quarter)**

The basic concepts and methodology of accounting for service and merchandising businesses. (Offered on all campuses)

**41.502 Accounting Principles II** (2 q.h.) (Offered every quarter)

The problems of income measurement and valuation related to sources and uses of invested capital. *Prereq.* 41.501.

**41.503 Accounting Principles III** (2 q.h.) (Offered every quarter)

The use of debt and investments in managerial financial decisions, followed by a brief introduction into cost decision analysis. *Prereq.* 41.502.

**41.504 Intermediate Accounting I** (2 q.h.)

The study of generally accepted accounting principles as applicable to the preparation of financial statements. Accounting for cash, securities, and receivables. *Prereq.* 41.503. (Available on suburban campuses)

**41.505 Intermediate Accounting II** (2 q.h.)

The use of various systems for accounting for the flow of inventory in a merchandising or manufacturing operation. Long-term investments as a means of providing stability to the concern. *Prereq.* 41.504.

**41.506 Intermediate Accounting III** (2 q.h.)

The problems of long-term asset acquisition and write-off through depreciation, amortization, and depletion methods. *Prereq.* 41.505.

**41.507 Cost Accounting I** (2 q.h.)

The foundations of cost accounting, including terminology, purposes, and relationship to financial accounting. *Prereq.* 41.503. (Available on suburban campuses)

**41.508 Cost Accounting II** (2 q.h.)

The planning and control of current operations through the use of standard costs and budgets. *Prereq.* 41.507.

**41.509 Cost Accounting III** (2 q.h.)

The use of cost accounting in special decisions and in long-range planning. *Prereq.* 41.508.

**41.510 Advanced Accounting I\*** (2 q.h.)

The accounting problems encountered through the issuance of capital stock, both at issue date and at subsequent dates. *Prereq.* 41.506. (Available on suburban campuses)

**41.511 Advanced Accounting II\*** (2 q.h.)

The techniques of statement analysis, using both internal and external information. A complete examination of cash and fund flow as it is used by the accountant and the analyst. *Prereq.* 41.510.

**41.512 Advanced Accounting III\*** (2 q.h.)

The introduction of special problems posed by partnerships, estates, and trusts. *Prereq.* 41.511.

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\*Upper level Business Administration course—see page 57.



**41.513 Specialized Problems I\* (2 q.h.)**

The problems of accounting for special sales. Introduction of the concepts of present value and its use in accounting. *Prereq.* 41.512. (Available at Boston and Burlington)

**41.514 Specialized Problems II\* (2 q.h.)**

The use of consolidated statements in conjunction with newly developing trends toward multi-purpose companies, combinations, mergers, and pools. *Prereq.* 41.513.

**41.515 Specialized Problems III\* (2 q.h.)**

The use of specialized systems and financial statements by companies. *Prereq.* 41.514.

**41.516 Auditing I\* (2 q.h.)**

The examination of modern auditing requirements relative to the professional ethics and legal responsibility of the certified public accountant and the public accountant. *Prereq.* 41.512. (Available at Boston and Burlington)

**41.517 Auditing II\* (2 q.h.)**

The methods and approach used in auditing assets of the firm. *Prereq.* 41.516.

**41.518 Auditing III\* (2 q.h.)**

The methods and approach used in auditing liabilities, owner equity, and nominal accounts of the firm. *Prereq.* 41.517.

**41.519 Federal Income Taxes I\* (2 q.h.)**

The application of the Federal Tax Law to the individual's income, gains, losses, and expenses. *Prereq.* 41.515. (Available at Boston and Burlington)

**41.520 Federal Income Taxes II\* (2 q.h.)**

The application of the Federal Tax Law to the individual's special deductions. Installment sales; income average. *Prereq.* 41.519.

**41.521 Federal Income Taxes III\* (2 q.h.)**

The application of Federal Tax Law to corporations. *Prereq.* 41.520.

**41.522 Seminar in Contemporary Accounting Problems\* (2 q.h.)**

The careful examination of the underlying concepts and conventions of accounting, and their application to financial statements. *Prereq.* 41.515, and 41.509. (Available at Boston and Burlington)

**41.523 Seminar in Contemporary Accounting Problems II\* (2 q.h.)**

The careful examination of the areas of revenue and income recognition, cost determination and allocation, and depreciation. *Prereq.* 41.522.

**41.524 Seminar in Contemporary Accounting Problems III\* (2 q.h.)**

The careful examination of newly developing accounting areas such as pensions, leases, stock options, and business combinations. *Prereq.* 41.523.

**41.525 Estate and Gift Taxes\*** (2 q.h.)

An examination of the relevant Internal Revenue Code provisions, property included in gross estate, including lifetime transfers which remain subject to some control by donor; marital and charitable deductions; administrative expenses; estate planning. *Prereq.* 41.521. (Offered 1976–1977)

**41.526 Corporate and Stockholder Tax Problems I\*** (2 q.h.)

Real estate transactions, stock market options, transfers of appreciated assets to donees, patents, sale of franchise rights, and redemptions of stock in closely held corporations. *Prereq.* 41.525. (Offered 1976–1977)

**41.527 Corporate and Stockholder Tax Problems II\*** (2 q.h.)

Contribution of assets, Section 301 distributions, preferred stock, partial liquidations, spin-offs; collapsible corporations, unreasonable accumulations, personal holding companies, and elements of reorganizations. *Prereq.* 41.526. (Offered 1976–1977)

**41.528 Tax Factors in Business Decisions\*** (2 q.h.)

An examination of the Federal Income Tax consequences of typical business decisions: form of enterprise; compensation policy; capitalization policy; corporate reorganizations, and other related areas. *Prereq.* 41.506. (Offered Fall and Spring Quarters) (Available at Boston and Burlington)

**41.533 Accounting for Management Decisions I** (non-accounting majors) (2 q.h.)

The preparation and interpretation of financial statements, including cash and fund flow, for internal use by the company. *Prereq.* 41.503. (Available at suburban campuses)

**41.534 Accounting for Management Decisions II** (non-accounting majors) (2 q.h.)

The preparation and interpretation of cost accounting information. *Prereq.* 41.533.

**41.535 Accounting for Management Decisions III** (non-accounting majors) (2 q.h.)

The utilization of accounting information for management decisions. *Prereq.* 41.534.

**41.541 Accounting Principles (Intensive)** (6 q.h.)

Basic concepts and methodology of accounting for service and merchandising businesses. The problems of income measurement and valuation related to sources and uses of invested capital. The use of debt and investments in managerial financial decisions, followed by a brief introduction into cost decision analysis. (*Not open to students who have taken 41.501, 41.502, 41.503.*) (Offered every quarter) (Available at Boston, Burlington, and Weymouth campuses)

**41.542 Intermediate Accounting (Intensive)** (6 q.h.)

The study of generally accepted accounting principles as applicable to the preparation of financial statements. Accounting for cash, securities, and receivables. The use of various systems for accounting for the flow of inventory in

\*Upper level Business Administration course—see page 57.

a merchandising or manufacturing operation. Long-term investments as a means of providing stability to the concern. The problem of long-term asset acquisition of and write-off through depreciation, amortization, and depletion methods. (*Not open to students who have taken 41.504, 41.505, 41.506.*) *Prereq. 41.503.* (Available at Boston and Burlington)

**41.543 Accounting for Management Decisions (Intensive)** (non-accounting majors) (6 q.h.)

The preparation and interpretation of financial statements, including cash and fund flow, for internal use by the company. The preparation and interpretation of cost accounting information and the utilization of accounting information for management decisions. (*Not open to students who have taken 41.533, 41.534, 41.535.*) *Prereq. 41.503.* (Offered Fall Quarter, Boston)

**41.551, 41.552 Accounting (A), (B)** (6 q.h.)

The basic concepts and methodology of accounting for service and merchandising businesses. The problems of income measurement and valuation related to sources and uses of invested capital. The use of debt and investments in managerial financial decisions, followed by a brief introduction into cost decision analysis. (Offered Fall and Spring Quarters) (Boston only)

**41.545 Auditing (Intensive)** (6 q.h.)

Same as 41.516, 517, 518. (Not available to students who have completed those courses.) *Prereq. 41.512.* (Available at Boston and Burlington)

**41.553 Internal Auditing I** (2 q.h.)

Designed to aid in understanding how a modern internal audit function undertakes to review and appraise diverse operations. Studies the audit organization, selection and development of staff preparation of long-range programs, performing preliminary surveys, and developing audit programs. The course is case study oriented. (Offered Boston only)

**41.554 Internal Auditing II** (2 q.h.)

Techniques of internal audit appraisal are examined. Topics include regression analysis, statistical sampling, computers as an audit tool, auditor responsibilities, and field work. Case studies are employed. *Prereq. 41.553.*

**41.555 Internal Auditing III** (2 q.h.)

Continuation of the study of internal auditing, emphasizing audit work papers, reports, reviews, replies, and management summaries. Case studies are employed. *Prereq. 41.554.*

### 43—MARKETING

*Consultant:* Prof. C. H. Dufton, Chairman, Marketing Dept. (College of Business Administration) 437-3260

*Associate Consultant:* G. P. Foster, 749-1599

**43.501 Introduction to Marketing I** (2 q.h.)

A description and evaluation of the marketing system and an introduction to

the decision-making process. (Offered every quarter) (Offered on all campuses)

**43.502 Introduction to Marketing II (2 q.h.)**

A continuation of Marketing I with emphasis upon specific marketing functions and their application through the use of case studies and analysis. *Prereq.* 43.501. (Offered every quarter)

**43.503 Introduction to Marketing III (2 q.h.)**

A continuation of the case method plus discussion and analysis of current marketing issues and problems. *Prereq.* 43.502. (Offered every quarter)

**43.504 Introduction to Marketing (Intensive) (6 q.h.)**

A description and evaluation of the marketing system and an introduction to the decision-making process, with emphasis upon specific marketing functions and their application through the use of case studies and analysis. A continuation of the case method plus discussion and analysis of current marketing issues and problems. (*Not open to students who have taken 43.501, 43.502, 43.503.*) (Offered every quarter) (Available at Boston, Burlington, and Weymouth campuses)

**43.505, 43.506 Introduction to Marketing (A), (B) (6 q.h.)**

A description and evaluation of the marketing system and an introduction to the decision-making process. A review of specific marketing functions and their application through the use of case studies and analysis. A continuation of the case method plus discussion and analysis of current marketing issues and problems. (Offered Fall Quarter) (Boston only)

**43.507 Sales Management I (2 q.h.)**

Through readings and case studies, the creation, management, and appraisal of the sales force are examined. In the first quarter of the course, emphasis is upon the principles, policies, and structures of sales organization and the selection of salesmen. *Prereq.* 43.503. (Available on suburban campuses)

**43.508 Sales Management II (2 q.h.)**

A continuation of 43.507 with emphasis upon sales force operation, including communication, sales training, compensation, expenses, supervision, morale, and stimulation. *Prereq.* 43.507.

**43.509 Sales Management III (2 q.h.)**

In this concluding quarter of the course, emphasis is upon *sales planning*: market potential, sales forecast, sales budgets, territories, quotas; *sales analysis*: sales volume, marketing cost, performance; and the sales manager. *Prereq.* 43.508.

**43.514 Marketing Fundamentals I (Industrial Technology majors only) (2 q.h.)**

A description of the role of marketing in the modern business firm and an introduction to basic marketing strategies. (Offered Fall and Winter Quarters) (Available on suburban campuses)

**43.515 Marketing Fundamentals II (Industrial Technology majors only) (2 q.h.)**

A continuation of Marketing Fundamentals I with emphasis upon specific marketing functions and the evaluation and control of the marketing effort. (Offered Winter and Spring Quarters)

**43.518 Retailing and Mass Merchandising I (2 q.h.)**

The marketing concept and retail management, retail profit and loss. Starting a retail business, store location, store planning, and the retail organization. (Available on suburban campuses)

**43.519 Retailing and Mass Merchandising II (2 q.h.)**

Merchandising planning and control, pricing, and buying. *Prereq.* 43.518.

**43.522 Retailing and Mass Merchandising III (2 q.h.)**

Distribution of merchandise, sales promotion, customers' services, retail accounting, and expense management. *Prereq.* 43.519.

**43.520 Industrial Marketing (2 q.h.)**

The marketing of products where other business firms and organizations are the customers, including a study of physical distribution, marketing concepts, and the decision-making process relevant to the marketing of business goods. *Prereq.* 43.503. (Offered Fall Quarter)

**43.525 Marketing Research I\* (2 q.h.)**

Introductory presentation and evaluation of procedures and techniques currently available to improve the chances of marketing success and effectiveness. *Prereq.* 43.503, 39.513, 45.572. (Offered Fall Quarter) (Available at Boston and Burlington)

**43.526 Marketing Research II\* (2 q.h.)**

Modern techniques of data collection and analysis, both quantitative and qualitative, in marketing research, forecasting, product planning, test marketing, marketing evaluation, and the application of modern data-processing techniques. *Prereq.* 43.525. (Offered Winter Quarter)

**43.529 International Marketing (2 q.h.)**

Opportunities, methods, and policies required for the successful development and management of international business and marketing operation. *Prereq.* 43.503. (Offered Winter Quarter)

**43.530 Consumer Behavior Seminar (2 q.h.)**

Economic, behavioral, and other models of consumer behavior are examined as bases for the planning and evaluation of marketing effort. *Prereq.* 43.503. (Offered Spring Quarter)

**43.532 Marketing Management I\* (2 q.h.)**

Advanced management and decision-making covering the complete marketing spectrum are analyzed in a variety of case studies and problems. *Prereq.* 43.503.

**43.533 Marketing Management II\* (2 q.h.)**

Using a seminar-type approach, emphasis is placed upon problem-solving in such areas as sales, logistics and physical distribution, advertising, pricing, new development, public and governmental policy. *Prereq.* 43.532.

**43.534 Marketing Management III\* (2 q.h.)**

A continuation of Marketing Management II, with increased emphasis upon case analysis and study. *Prereq.* 43.533.

\*Upper level Business Administration course—see page 57.

**43.536 Introduction to Advertising** (2 q.h.)

A broad survey of advertising and how it contributes to business activity, and to our society and culture, with emphasis on the principles involved in its increasing importance as a major form of communications and motivation. (Offered Spring Quarter)

**43.537 Marketing and Sales Seminar\*** (2 q.h.)

A one-quarter, capstone course to round out the student's study of marketing through investigation and analysis of the most recent trends in marketing management, finance, logistics, sales, advertising, and promotion. *Prereq.* 43.534. (Offered Spring Quarter) (Available at Boston and Burlington)

**43.541 Public Relations I** (2 q.h.)

Introduction to the basic principles, purposes, and methods of public relations. *Prereq.* 43.503. (Offered Fall Quarter)

**43.542 Public Relations II** (2 q.h.)

A continuation of Public Relations I providing in-depth coverage of the planning, management, operation, and evaluation of public relations programs, including case analysis. *Prereq.* 43.541. (Offered Winter Quarter)

**43.543 Salesmanship I** (2 q.h.)

Opportunities in personal selling for both men and women; the importance in the marketing mix; introduction to broadly applicable principles for all types of selling. *Prereq.* 43.503. (Offered Fall Quarter)

**43.544 Salesmanship II** (2 q.h.)

Development of techniques as required for the personal selling of goods and services through middlemen and direct to the consumer. Both industrial and consumer channels are studied. *Prereq.* 43.543. (Offered Winter Quarter)

**43.545 Product Management and Development** (2 q.h.)

An analysis of the problems present in managing and directing product development activities. Presents current trends and concepts in new product planning, development, improvement, evaluation, and marketing. Both consumer and industrial products will be studied. *Prereq.* 43.503. (Offered Fall and Spring Quarters) (Available at Boston and Burlington)

**43.546 Advertising and Sales Promotion Management I\*** (2 q.h.)

The principles of advertising and sales promotion and how they are used with maximum efficiency as communications and motivational functions of the marketing mix. (Formerly 43.511) *Prereq.* 43.503. (Available on suburban campuses)

**43.547 Advertising and Sales Promotion Management II\*** (2 q.h.)

A study of specific advertising and sales promotion techniques in various media, with emphasis on the development of creative concepts as an important part of sales and marketing strategy. (Formerly 43.512) *Prereq.* 43.546.

**43.548 Advertising and Sales Promotion Management III\*** (2 q.h.)

Case histories and contemporary projects are used for improving ability to develop creative advertising and sales promotion strategies in support of overall sales and marketing goals. (Formerly 43.513) *Prereq.* 43.547.

**49.506 Consumer Education** (2 q.h.)

The development of knowledge and skills involved in the daily life and economic welfare of the consumer and consumer groups, including competency in managing money; purchasing and using goods and services; banking; investments; credit; consumer legislation; evaluation of consumer research and product testing; and the role of the consumer in the economy. (Offered Fall and Spring Quarters)

**44—FINANCE AND INSURANCE****Finance**

*Consultant:* Prof. R. J. Hehre (College of Business Administration) 432-3248

*Coordinator:* W. F. Hancock, Jr.

**44.501 Finance and Risk Management I** (2 q.h.)

A survey of major financial institutions and their role within the economy. Special emphasis is given to the dollar supply, commercial banking, the Federal Reserve System, and savings institutions. *Prereq.* 41.503. (Offered every quarter) (Available on all campuses)

**44.502 Finance and Risk Management II** (2 q.h.)

A study of security markets and investment institutions. The student is introduced to stocks, bonds, investment companies, and trust companies. (Offered every quarter)

**44.503 Finance and Risk Management III** (2 q.h.)

This course is intended to acquaint each student with personal property and liability risks, and the forms of insurance designed to meet these risks. The emphasis is placed on basic insurance principles inherent in life, homeowners, and automobile coverage. (Offered every quarter)

**44.504 Finance and Risk Management (Intensive)** (6 q.h.)

Same as 44.501, 44.502 and 44.503. (*Not open to students who have taken those courses.*) (Offered Fall and Winter Quarters) (Available at Boston and Burlington)

**44.505 Corporate Finance (Intensive)** (6 q.h.)

An introduction to the role of financial management of the business firm. Review of financial statements, promotion, and forms of organization. Planning the use of assets and cost of capital concepts are introduced as management evaluation techniques. An analytical approach to capital budgeting and optimum asset returns. Cost of capital is further developed and applied against consideration of capital mixture. The analysis of various financial tools are considered.

An intensive examination of short- and intermediate-term credit, as well as the distribution of stocks and bonds to the public and special buyers. A survey of reorganization and liquidation techniques are analyzed. (Not open to students who have taken 44.507, 44.508, 44.509.) *Prereq.* 44.501. (Offered Winter and Spring Quarters) (Available at Boston and Burlington)

#### **44.507 Corporate Finance I (2 q.h.)**

An introduction to the role of financial management of the business firm. Review of financial statements, promotion, and forms of organization. Planning the use of assets and cost of capital concepts are introduced as management evaluation techniques. *Prereq.* 41.503, 44.501. (Available at all campuses)

#### **44.508 Corporate Finance II (2 q.h.)**

An analytical approach to capital budgeting and optimum asset returns. Cost of capital is further developed and applied against consideration of capital mixture. *Prereq.* 44.507.

#### **44.509 Corporate Finance III (2 q.h.)**

The analysis of various financial tools are considered. An intensive examination of short- and intermediate-term credit, as well as the distribution of stocks and bonds to the public and special buyers. A survey of reorganization and liquidation techniques are analyzed. *Prereq.* 44.508.

#### **44.517 Investments I\* (2 q.h.)**

Investment goals and objectives are considered. Various types of investments are compared and the role of the securities markets examined. *Prereq.* 44.509. (Available at suburban campuses)

#### **44.518 Investments II\* (2 q.h.)**

Broad coverage of the relationship between the economy and stock price averages. Methods of analyzing and appraising developments within the corporation as they apply to the investment analyst's techniques. *Prereq.* 44.517.

#### **44.519 Investments III\* (2 q.h.)**

The relation of earnings, dividends, and cash flow to market valuation of a company's securities. Portfolio analysis and planning are examined, as well as methods of security selection. Technical and fundamental factors are also considered. *Prereq.* 44.518.

#### **44.521 Credit Management I\* (2 q.h.)**

An introduction to credit and its functions, including the role of the credit executive, credit investigation, documentary credit, trade credit. *Prereq.* 44.509. (Available at Boston and Burlington)

#### **44.522 Credit Management II\* (2 q.h.)**

The organization and function of credit departments; various forms of credit and collection services. *Prereq.* 44.521.

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\*Upper level Business Administration course—see page 57.



**44.523 Credit Management III\*** (2 q.h.)

Analysis of financial statements to determine credit worthiness, creditor's rights, adjustment bureau, credit insurance, and guarantees. *Prereq.* 44.522.

**44.531, 44.532 Seminar in Finance I, II\*** (4 q.h.)

Student participation in the study and analysis of case histories. Individual papers presented. *Prereq.* All finance courses. (Offered Fall and Winter Quarters)

**44.533 International Finance I** (2 q.h.)

Introduction to international financial management in the multi-national corporation. Analysis of the basic problems and finance considerations involved with international investments, trade, and payments. Planning in the international environment related to exchange rates, currency revaluations, inflation, and local government policies. *Prereq.* 44.507 or consent of instructor. (Offered Fall Quarter) (Available at Boston and Burlington)

**44.534 International Finance II** (2 q.h.)

Analysis of the financial strategy involved with international investment alternatives, sources of capital, working capital management, fund flows, and management control through accounting and financial reporting. *Prereq.* 44.533. (Offered Winter Quarter)

**44.535 Investments (Intensive)** (6 q.h.)

Investment goals and objectives are considered. Various types of investments are compared and the role of the securities markets examined. Broad coverage of the relationship between the economy and stock price averages. Methods of analyzing and appraising developments within the corporation as they apply to the investment analyst's techniques. The relation of earnings, dividends, and cash flow to market valuation of a company's securities. Portfolio analysis and planning are examined, as well as methods of security selection. Technical and fundamental factors are also considered. (*Not open to students who have taken 44.517, 44.518, 44.519.*) *Prereq.* 44.509. (Offered Spring Quarter) (Available at Boston and Burlington)

**44.544 Law of Finance\*** (2 q.h.)

A consideration of the legal problems immediately affecting finance. Special attention is given to the field of corporate law. *Prereq.* 44.509, 45.543. (No longer offered)

**44.545 Profit Planning and Control I\*** (2 q.h.)

An intensive treatment of managerial planning, budgetary control, and financial analysis. Emphasis is placed on the interrelationship between functional areas in an organization using consolidated profit planning as an integrating device. Students will utilize materials studied in earlier courses. Topics covered include fundamental financial analysis, comprehensive profit planning and control, general expense planning and control, production planning, materials planning and control, purchasing direct, etc. *Prereq.* 41.506, 44.509 or equiv. (Offered Fall Quarter)

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\*Upper level Business Administration course—see page 57.

**44.546 Profit Planning and Control II\*** (2 q.h.)

Topics covered include development and application of variable budgets, planning and controlling capital expenditures, computer applications in profit planning, cash flow planning and control, cost-profit-volume analysis, performance reporting and analysis of budget variations. *Prereq.* 44.545. (Offered Winter Quarter)

**44.547 Advanced Financial Problems\*** (2 q.h.)

An in-depth examination of two complex but vital financial areas. Failure and reorganization, and merger and consolidation. Students will devote considerable time to studying the legal relationships and requirements of both areas and their business implications. *Prereq.* 44.509 or equiv. (Offered Spring Quarter)

**44.548 Capital Strategy\*** (2 q.h.)

Focuses on the matters of capital budgeting and the related capital structure problems with particular emphasis on the role of the cost of capital in long-range decision-making. The processes by which investment decisions and financing decisions are made as well as sources of long-term funds are examined. (Offered Spring Quarter)

**44.550, 44.551 Personal Finance I, II** (4 q.h.)

(Recommended for all non-Finance majors.) Course takes a practical approach to problems of managing personal finances. Topics include financial planning, budgeting, obtaining credit and loans, income taxes, savings and investments, life insurance, home buying, and estate planning. Subjects are treated on a non-technical basis. (Offered Fall and Winter Quarters) (Available at all campuses)

**44.552 Personal Finance (Intensive)** (4 q.h.)

Same as 44.550 and 44.551. (Offered Fall, Winter, and Spring Quarters) (Available in Boston only)

**44.553 New Venture Financing** (2 q.h.)

Designed to assist the entrepreneur in establishing and financing his own business. Particular problems of small business finance as well as the expansion of established and growing businesses are given close attention. Methods of raising and safeguarding capital and the practical management of new business financial problems are covered as well. Field work and guest lecturers are featured wherever practical. *Prereq.* 44.509. (Offered Spring Quarter) (Available in Boston only)

**44.554, 44.555 Savings Banks and Banking I, II** (4 q.h.)

A professional course in the management of institutions involved in the channeling of savings into investments. Investment and loan practices are covered in detail, as well as such topics as community relations, deposit attraction programs, and personnel management. *Prereq.* 44.509. (Offered Fall and Winter Quarters) (Available in Boston only)

**44.556, 44.557 Commercial Banks and Banking I, II** (4 q.h.)

A professional-level course in the management of commercial banks designed for students currently in or desiring to enter the commercial banking field.

Course concentrates on the efficient management of bank assets, including bank liquidity, capital adequacy, investment and loan portfolio management, bank audit and control, and community relations. *Prereq.* 44.509. (Offered Fall and Winter Quarters) (Available in Boston only)

## Insurance

### **44.511 Life Insurance I (2 q.h.)**

A study of the origin, development, and basis of modern life insurance. Analysis and comparison of the various policies and riders and their uses. (Offered Fall Quarter) (Available at Boston and Burlington)

### **44.512 Life Insurance II (2 q.h.)**

The fundamentals of programming, including beneficiary designations, settlement options, and tax implications. Company organization and operations: underwriting, investments, and regulations. (Offered Winter Quarter)

### **44.513 Estate Planning and Business Insurance (2 q.h.)**

The use of insurance to meet the needs of the various types of business organizations. The planning, disposition, administration, and taxation of testamentary and intervivos transfers of property. (Offered Spring Quarter) (Available at Boston and Burlington)

### **44.514 Property and Casualty Insurance I (2 q.h.)**

The basis of modern property-casualty insurance. Analysis of the insurance contract, its application, meaning, and rating. (Available at Boston and Burlington)

### **44.515 Property and Casualty Insurance II (2 q.h.)**

Study of various policies including automobile, homeowners, inland marine, and commercial special multi-peril. *Prereq.* 44.514.

### **44.516 Property and Casualty Insurance III (2 q.h.)**

A study of the mechanics of the insurance industry, including types of companies, reserves, reinsurance, financial analysis, and government regulation. *Prereq.* 44.515.

### **44.525 Health and Social Insurance I\* (2 q.h.)**

A study of the economic basis served by health and social programs of insurance, including a detailed analysis and comparison of the plans offered. (Offered Fall Quarter) (Available at Boston)

### **44.526 Health and Social Insurance II\* (2 q.h.)**

A continuing study of contracts, including benefit structure, rate-making, reserves, and the proper use and coordination of the plans available from private industry and from the government. *Prereq.* 44.525. (Offered Winter Quarter)

### **44.527 Group Insurance and Pensions (2 q.h.)**

The nature, development, and coverage offered by group life and health insur-

\*Upper level Business Administration course—see page 57.

ance. Analysis of the various kinds of individual and group pension plans and their use. (Offered Spring Quarter) (Available at Boston)

**44.529 Advanced Property Insurance\*** (2 q.h.)

A study of the plans and programs designed to provide protection for multi-peril, diversified industrial, and commercial organizations. *Prereq.* 44.515. (Offered in Fall Quarter) (Available at Boston only)

**44.530 Advanced Property-Casualty Insurance\*** (2 q.h.)

A study of the various plans and programs for providing liability and casualty protection for commercial and industrial organizations. *Prereq.* 44.515. (Offered Winter Quarter) (Available at Boston only)

**44.543 Law of Insurance\*** (2 q.h.)

A study of the legal problems affecting insurance, including regulation design and interpretation of contracts and the relationship between the insurance company, its agent, and the public. *Prereq.* 45.543. (Offered Spring Quarter) (Available at Boston only)

## 45—MANAGEMENT

### General Management

*Consultant:* Prof. D. McCarthy (College of Business Administration) 437-3256

*Coordinator:* J. L. Griffith 843-6209

*Coordinator:* W. A. Gagne 647-2121

**45.501, 45.502, 45.503 Management and Organization I, II, III** (6 q.h.)

An introduction to the American business system; comparison with other economic systems; principles and concepts of organization and management. Emphasis on topics such as the social responsibilities of business; business and its environment; business ethics, etc. Traditional material presented toward an understanding of modern American business and preparation for a business career. The environment within which business operates; a review of the theory and practice of organization; the "what" and "how" of the management process; an application of the concepts covered to the functional areas of business. *Prereq.* 45.502, 45.503. (Offered every quarter) (Available on all campuses)

**45.652 Management and Organization (Intensive)** (6 q.h.)

Same as 45.501, 45.502, 45.503. (*Not open to students who have completed those courses.*) (Offered every quarter) (Available at Boston, Burlington, and Weymouth)

**45.523, 45.524, 45.525 Management Seminar I, II, III\*** (6 q.h.)

A broad interdisciplinary project utilizing one or more of the techniques of library research, field research, field surveys and organizational audits. Students will be expected to utilize the knowledge gained in earlier course work. *Prereq.* 45.535. (Available at Boston and Burlington)

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\*Upper level Business Administration course—see page 57.

**45.533, 45.534, 45.535 Management Decisions and Policies I, II, III (6 q.h.)**

Takes the viewpoint of the general manager in planning effective relationships between the organization and its environment. Emphasis placed on sensing, analyzing, evaluating, and responding to demographic, cultural, political and technological change. Functions and responsibilities of top management; problems which affect the character and success of the total enterprise; operations in various environments and the impact of government regulations. A framework will be developed for dealing with a total organization evolving or modifying strategies and policy. Cases are drawn from profit-oriented and non-profit entities of various sizes in widely diversified fields, operating in a variety of environments. Students will be expected to actively participate in class discussions of case studies. *Prereq.* minimum of 100 quarter hours of completed course work. (Available at Boston, Burlington, and Norwood)

**45.600, 45.601, 45.602 Small Business Management I, II, III (6 q.h.)**

For those who wish to explore the opportunities of being in a small business or in business for themselves. Subjects considered include objective self-analysis; discovery of opportunities in the manufacturing, retailing and service fields; raising and conservation of capital; organization and site location factors; management controls in relation to legal, financial, personnel, and marketing problems. (Available at Boston and Burlington)

**45.603 Administrative Management and Office Services I (2 q.h.)**

Principles and techniques of modern administrative management including organization, planning, office mechanization, computers, information requirements analysis, and the conducting of a systems study. (Offered Fall Quarter) (Available at Boston only)

**45.604 Administrative Management and Office Services II (2 q.h.)**

An analysis of systems and procedures, business writing, report structuring, records management, control techniques, staffing, and methods of directing the administrative management function. *Prereq.* 45.603. (Offered Winter Quarter) (Available at Boston only)

**45.606 Management Decisions and Policies (Intensive)\* (6 q.h.)**

Same as 45.533, 45.534, 45.535, except presented twice per week during a single quarter. *Prereq.* Minimum of 100 quarter hours of completed course work. (Offered Summer Quarter)

**45.646 Management Seminar (Intensive)\* (6 q.h.)**

Same as 45.523, 45.524, 45.525, except presented as a single-quarter intensive course. (Not open to students who have taken 45.523, 524, 525.) *Prereq.* 45.535. (No longer offered)

**45.667 Project Planning and Control (2 q.h.)**

This course employs a systems approach to planning and controlling a work project. Topics to be covered include detailed planning techniques, establishment of functional and individual responsibilities, resource allocation, identifying anticipated benefits, measuring results and effective progress reporting. Students will be expected to actively participate in class workshop sessions.

\*Upper level Business Administration course—see page 57.

*Prereq. Minimum of 40 quarter hours of completed work. (Offered every quarter)  
(Available at all campuses)*

**45.670, 45.671, 45.672 Management of Change I, II, III (6 q.h.)**

Traditional concepts of management are reexamined in light of current changes in employee attitudes, material, energy and capital shortages, consumer protection interests, unemployment and inflation problems, and government reactions. Selected cases of reaction to change by business organizations as reported in current business publications are studied. Students are expected to identify changes that call for new management strategy and to evaluate actions taken by the firms studied. Further, the student will be expected to reevaluate his own career goals in relation to the changing world of business, and to restructure those goals accordingly. *Prereq. 45.503. (Available at Boston only)*

**45.696 Principles and Practice of Management (2 q.h.)**

Considers management as a process engaged in various levels of any organization, and investigates fundamental principles which are generally accepted as the foundation of management action. Included among other topics are those of planning, organizational considerations, and directing and controlling an organization. Application of generally accepted principles are considered through investigation of management practice in organizational settings. (Offered every quarter) (Available at Boston, Burlington, Framingham, and Weymouth)

**49.504 Strategy for Planning I (3 q.h.)**

Students participate as team members in a computerized decision-making exercise. Course materials, class discussions, and guest lecturers will expose the student to planning techniques, systems, and issues with which executive management becomes involved. Each class member is provided with an opportunity to use a full range of skills and experience to make key decisions in planning and operating a company in an uncertain, competitive environment. *Prereq. Minimum of 100 quarter hours of completed work. 45.535 recommended. (Offered Fall and Winter Quarters) (Available at Boston only)*

**49.505 Strategy for Planning II (3 q.h.)**

A continuation of 49.504. Students will have continued opportunities to analyze results of previous decision-making, engage in additional planning and decision-making, and conduct board meetings. *Prereq. 49.504. (Offered Winter and Spring Quarters) (Available at Boston only.)*

## **Industrial Management Courses**

*Consultant: J. M. Rosenfeld 969-4783*

**45.506 Production Management and Manufacturing Systems I (2 q.h.)**

Analysis of the basic areas of production management, characteristic organizations, activities, responsibilities, and decision-making. The systems concept as applied to manufacturing. Manufacturing costs and their management. (Available at all campuses)

**45.507 Production Management and Manufacturing Systems II (2 q.h.)**

Further analysis of the manufacturing system, including production control,

materials, work design, simplification and measurement; quality control; data processing as applied to manufacturing; selected readings in modern production management techniques. *Prereq.* 45.506. (Available at all campuses)

**45.508 Production Management and Manufacturing Systems III (2 q.h.)**

Continuing study and analysis of the manufacturing function; production and process technology; workplace methods and standards; planning and control of operations and inventories: concepts, analytical techniques and information systems; selected case studies emphasizing relevant production management and manufacturing systems, concepts and applications. *Prereq.* 45.507. (Available at all campuses)

**45.519 Work Methods (2 q.h.)**

The principles of motion economy and work simplification in analysis and improvement of methods, utilizing flow charts, diagrams, work station activity charts, and laboratory techniques. (Offered Fall Quarter) (Available at Boston only)

**45.526 Facilities Planning and Design I (2 q.h.)**

The planning and designing of industrial plants, in terms of equipment and machinery requirements, plant layout and material flow, utilizing flow charting, scheduling, and laboratory scale models. *Prereq.* 45.508. (Offered Fall Quarter) (Available at Boston only)

**45.531 Facilities Planning and Design II (2 q.h.)**

The fundamentals of material handling and related equipments, vehicles, and machinery, including cranes, conveyors, freight elevators, and monorails, with emphasis on analysis of problems, typical cases, and costs, and including engineering economy. *Prereq.* 45.526. (Offered Winter Quarter) (Available at Boston only)

**45.528 Work Measurement (2 q.h.)**

Measurement techniques as applied to development of production and wage standard data, including appropriate incentive plans and directed towards quantity manufacturing, with laboratory use. (Offered Winter Quarter) (Available at Boston only)

**45.530 Standard Data Development (2 q.h.)**

Development of production standards for job shop operations, applying curve, table, equation, nomograph, family and multivariables techniques, and utilizing work sampling methods and laboratory practice. (Offered Spring Quarter) (Available at Boston only)

**45.595 Manufacturing Seminar I\* (2 q.h.)**

Problems of manufacturing operation at the plant manager level, including production economics of specialization, simplification, standardization, diversification, expansion, contraction, or integration, all with pertinent, selected case studies. *Prereq.* 45.625 & 45.637. (Available at Boston only)

**45.596 Manufacturing Seminar II\* (2 q.h.)**

Continued analysis of manufacturing problems, including plant location, layout,

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\*Upper level Business Administration course—see page 57.

materials handling, power maintenance, labor market status, organization and wage policy, all with pertinent, selected case studies. *Prereq.* 45.595. (Available at Boston only)

**45.597 Manufacturing Seminar III\* (2 q.h.)**

Continued analysis of manufacturing problems, including controls of the manufacturing process; product design and development, scheduling, inventory, quality, cost and budgetary controls with applicable cases. *Prereq.* 45.596. (Available at Boston only)

**45.620 Industrial Safety (2 q.h.)**

A study of the organization and administration of a comprehensive accident-prevention program, including analysis of industrial hazards and accidents, corrective actions, and the responsibilities of all management echelons, from the safety engineer to top management. (Offered Fall and Spring Quarters) (Available at Boston only)

**45.623 Manufacturing Processes I—Material (2 q.h.)**

Materials and their processing, including the derivation, characteristics, and applications of materials used in industry, such as ferrous, non-ferrous metals, plastics, their mechanical, thermal, electrical, chemical, and other properties with an analysis of applications to manufacturing. (Available at most campuses)

**45.624 Manufacturing Processes II—Production (2 q.h.)**

Machinery, welding, and allied processing, including an analysis of product design. Production processes and material selection in the production and manufacturing of hard goods, including selection of best methods by study of casting, machinery, forming, joining, hot and cold locking, extrusion, finishing, and assembly. *Prereq.* 45.623. (Available at most campuses)

**45.625 Manufacturing Processes III—Automation (2 q.h.)**

The analysis of advanced manufacturing processes, including mass production, numeric control, central vs line layout systems, automated systems and related problems, computer controlled equipment and systems, equipment and machinery selection and replacement policies. Emphasis on manufacturing processes case studies. *Prereq.* 45.624. (Available at most campuses)

**45.627, 45.628 Value Management I, II (4 q.h.)**

An organized technique for challenging costs by analyzing a product or method in terms of value, function, costs, without sacrificing essential quality. (Offered Fall Quarter) (Available at Boston and Burlington)

**45.636 Production and Inventory Control I (2 q.h.)**

Basic analysis and systems design techniques for controlling production. Aspects of intermittent and continuous production scheduling and the relationship of planning, scheduling and dispatching, and utilizing mathematical models. Scheduling techniques of PERT, CPM, line of balance, and learning curves. Field trip to local company and examination of its production control system. (Offered Fall and Winter Quarters) (Available at Burlington, Weymouth, Norwood, and Revere)

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\*Upper level Business Administration course—see page 57.



**45.637 Production and Inventory Control II (2 q.h.)**

Analysis and systems design techniques for controlling inventory levels emphasizing cost reduction, including inventory investment, economic order quantity, make or buy decisions, and warehousing. Goals include bringing the range of concept and technique to the point of useful application in practical design. *Prereq.* 45.636. (Offered Winter and Spring Quarters) (Available at Burlington, Weymouth, Norwood, and Revere)

**45.638 Industrial Decision Making I\* (2 q.h.)**

The development of a systematic approach to problem solving and decision making; decision theory; structure of human decisions. *Prereq.* 10.334. (Available at Boston only)

**45.639 Industrial Decision Making II\* (2 q.h.)**

Application of mathematical methods of management science and quantitative decision-making procedures to practical industrial problems; optimization and models applied to production functions such as the inventory process, plant location, layout and maintenance, and equipment selection, replacement, and maintenance. *Prereq.* 45.638. (Available at Boston only)

**45.640 Industrial Decision Making III\* (2 q.h.)**

Application of mathematical methods of management science and quantitative decision-making procedures to practical industrial problems, including linear systems utilizations and functional production applications such as: economic lot size, optimal machine loading, production, and employment scheduling; seasonal inventory distribution; transportation and transshipment models; maximum profit margin; methods improvements; selected case studies. *Prereq.* 45.639. (Available at Boston only)

**45.642 Production Management and Manufacturing Systems (Intensive) (6 q.h.)**

Same as 45.506, 45.507, 45.508. (*Not open to students who have completed those courses.*) (Offered every quarter) (Available at Boston, Burlington, and Weymouth)

**45.673 Industrial Processes I (2 q.h.)**

Familiarizes the Industrial Technology student with the materials and processes used in manufacturing to convert ideas into products, machines and structures; characteristics and applications of material's used in industry; casting and forming processes; machining processes. (*Open to Industrial Technology students only.*) (Offered every quarter) (Available at most campuses)

**45.674 Industrial Processes II (2 q.h.)**

Continued analysis of manufacturing processes including welding and allied processes; machine tools: advantages and limitations; economic analysis of manufacturing processes; automated and computer controlled systems; equipment and machinery selection and replacement policies. *Prereq.* 45.673. (Offered every quarter) (Available at most campuses)

**45.688 Production and Inventory Control (Intensive) (4 q.h.)**

Same as 45.636, 45.637. (*Not open to students who have completed those*

\*Upper level Business Administration course—see page 57.

courses.) (Offered every quarter) (Available at Boston and Burlington)

#### **45.695 Materials Management (2 q.h.)**

The development and examination of materials management objectives as they relate to cost improvement, investment control, and ability to serve the market; the development of an integrated materials system; cases in materials management. (Offered every quarter) (Available at Boston and Burlington)

#### **49.501 Environmental Management I (2 q.h.)**

The state of our environment now and in the future—an introduction to the types and threats of pollution, including the atmosphere, land, and waterways. Emphasis placed on impact of pollution upon economic growth, business profitability, governmental outlays, and individual expenditures. Lectures, class participation, and selected readings. Written reports required. (Offered 1976–1977)

#### **49.502 Environmental Management II (2 q.h.)**

A continuation of Environmental Management I in which the level of our technology is explored. A review of control techniques, disposal systems and purification equipment with an evaluation of their effectiveness and costs. Critical unsolved technical problems and the needs for scientific investigation will be highlighted. Lectures, class participation, and selected readings. Written reports required. *Prereq.* 49.501. (Offered 1976–1977)

#### **49.503 Environmental Management III (2 q.h.)**

A continuation of Environmental Management II in which past, present, and future controlling and corrective actions of business and government and the individual are examined. Evaluation of the balance between responsible self control and preventive legislation. Specific attention to the complexity of interacting factors and the dilemma of productivity demands versus the environmental limitations of adaptability. Lectures, class participation, and selected readings. Written reports required. *Prereq.* 49.502. (Offered 1976–1977)

## **Purchasing**

*Coordinator:* Mr. A. D. Finley 475-6172

#### **45.537 Purchasing I (2 q.h.)**

The span of responsibilities; its objectives, organization, and personnel requirements. Systems and operational flow with current techniques. The interface with EDP. The acquisition of correct quality levels. Developing sources of supply. (Available at most campuses)

#### **45.538 Purchasing II (2 q.h.)**

Planning materials acquisition to optimize inventory investment. Controlling the aspects of price. The "make or buy" decision. The functions of planning, forecasting, and special project research. The application of standardization and value analysis/engineering principles. *Prereq.* 45.537. (Available at most campuses)

#### **45.539 Purchasing III (2 q.h.)**

The art and techniques of negotiation. Purchasing capital equipment, materials

budgeting. Major policy considerations. Supplier relations and ethical behavior profiles. The impact of law and its constraints. Evaluating purchasing performance. *Prereq.* 45.538. (Available at most campuses)

**45.550 Purchasing (Intensive)** (6 q.h.)

Same as 45.537, 45.538, 45.539. (Offered Fall Quarter) (Available at Boston only)

**45.626 Professional Purchasing Techniques\*** (2 q.h.)

A seminar-type examination of methods of negotiation, use of contract types and incentives which yield improved buyer performance. Price analysis and the development of supplier monitoring and control techniques. *Prereq.* 45.539. (Offered Spring Quarter) (Available at Boston, Burlington, Weymouth, and Milford)

**45.666 The Materials Acquisition Function** (2 q.h.)

A survey of the procurement function as found in industry. This course is designed to furnish candidates, with majors in other than purchasing, a broad comprehension of the acquisition function. Purchasing's mission, procedures, proper interface with other functions, and its legitimate objectives are explored. System techniques, organizational structures and required skills are investigated and particular attention is given to the integration of this function into the total cycle of product creation. (Offered Fall and Spring Quarters) (Available at Boston and Burlington)

### **Personnel & Industrial Relations**

*Consultant:* Professor Christine L. Hobart 437-3252

*Associate Consultant:* (Industrial Labor Relations) Mr. D. F. Hurley 785-0484

**45.545 Law Employment Standards\*** (2 q.h.)

The minimum wage laws—state and federal—and laws on employment practices, administrative and enforcement procedures, employment provisions of the 1964 Civil Rights Act, and of state anti-discrimination laws. *Prereq.* 45.611. (Offered in Fall Quarter) (Available at Boston only)

**45.546 Law of Employment Conditions\*** (2 q.h.)

The Labor Management Reporting and Disclosure Act, the Social Security Act, The Massachusetts Employment Security Act. The Massachusetts Workmen's Compensation Act, veterans' reemployment rights. *Prereq.* 45.611. (Offered Winter Quarter) (Available at Boston only)

**45.548 Law of Labor Management Relations\*** (2 q.h.)

The legal framework for collective bargaining, the impact of the anti-trust laws on labor unions, injunctions in labor disputes, the Railway Labor Act, the National Labor Relations Act, the Labor-Management Relations Act. *Prereq.* 45.611. (Offered Spring Quarter) (Available at all campuses)

**45.553 The Labor Agreement\*** (2 q.h.)

Labor contracts: component clauses, grievance analysis, and arbitration procedures. Case studies in labor-management relations affected by such clauses.

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\*Upper level Business Administration course—see page 57.

*Prereq.* 45.611 (Offered Fall Quarter) (Available at Boston, Burlington, and Framingham)

**45.556 Negotiations, Mediation, Arbitration\*** (2 q.h.)

The bargaining process; preparation and negotiation of agreements; mediation, fact-finding, arbitration, other alternatives to the strike. *Prereq.* 45.611. (Offered Winter Quarter) (Available at Boston, Burlington, and Framingham)

**45.560 Seminar on Labor Issues\*** (2 q.h.) (For Seniors only)

An advanced discussion of current labor-management issues; policy as to disputes, wage guidelines, public employees' unions, professionals, etc. *Prereq.* 45.546, 45.548, 45.553. (Offered Spring Quarter) (Available at Boston, Burlington, and Framingham)

**45.610 Labor Management Relations I** (2 q.h.)

The American labor movement and labor relations development; collective bargaining issues, policy and practice; public control of industrial relations. *Prereq.* 39.503. (Offered every quarter) (Available at all campuses)

**45.611 Labor Management Relations II** (2 q.h.)

Continuation of Part I. The economic and political impact of bargaining power on labor markets, employment, wages, and income. *Prereq.* 45.610. (Offered every quarter) (Available at all campuses)

**45.690 Labor Management Relations (Intensive)** (4 q.h.)

The American labor movement and labor relations development; collective bargaining issues, policy, and practice; public control of industrial relations. The economic and political impact of bargaining power on labor markets, employment, wages, and income. *Prereq.* 39.503. (*Not open to students who have taken 45.610, 45.611.*) (Offered every quarter) (Available at Boston, Burlington, and Weymouth)

**49.539 International Labor Relations** (2 q.h.)

A survey of union-employee relations on the international level with specific reference to Western Europe, Japan, Australia, and Mexico. An examination of the legal structure, the structure of unions, the organization of both employers and unions for collective bargaining, and the impact on major economic or governmental policies. Replaces course 45.557. (Offered Fall Quarter) Available at Boston only)

## Personnel

*Coordinator:* Mr. Ronald E. Guittarr 475-5000  
(Personnel Relations)

**45.511, 45.512 Human Relations in Organizations I, II** (4 q.h.)

The first quarter emphasizes the expanding popularity of human relations, describing participation, formal and informal organizational concepts, and leadership patterns. The second quarter provides a review of the processes of communication, appraisal of performance, and accomplishment of change. Classes are highly participative, with emphasis on case discussion as related to text materials. (Offered every quarter) (Available at all campuses)

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\*Upper level Business Administration course—see page 57.

**45.552 Advanced Human Relations (2 q.h.)**

A seminar to discuss the theories of human effectiveness. An amplification of topics surveyed in Human Relations I, II, emphasizing their practical application to present-day management of business enterprises. Review implications of such theories as the managerial grid, theory X, Y, maintenance vs motivation, etc. *Prereq.* 45.512. (Offered every quarter) (Available at all campuses)

**45.513 Personnel Management I (2 q.h.)**

Organization, function, and procedures of the personnel department in relationship to the management organization; manpower selection; training; rating; personnel policies, benefits, and reports. (Available at all campuses)

**45.514 Personnel Management II (2 q.h.)**

Principles and techniques of training, the psychology of learning, meeting training needs, principles and practices of organizing training activities. *Prereq.* 45.513. (Available at all campuses)

**45.515 Personnel Management III (2 q.h.)**

Controlling and coordinating the managerial responsibility of supervision; planning the work; employee assignments; employee attitudes; employee grievances; administering company policies, developing work interest. *Prereq.* 45.514. (Available at all campuses)

**45.517 Techniques of Employee Selection\* (2 q.h.)**

Recruitment, selection, and placement techniques including interviewing, employment testing, and examining. *Prereq.* 45.515. (Offered Spring Quarter) (Available at Boston and Burlington)

**45.518 Wage and Salary Administration\* (2 q.h.)**

Wage and salary determination; merit and incentive plans; wage and salary structure; compensation methods; impact on employer-employee relations in the economy. *Prereq.* 39.503, 45.503. (Offered in Fall Quarter) (Available at Boston and Burlington)

**45.521 Employee Benefits\* (2 q.h.)**

Private and public programs directed to job and worker income security; unemployment compensation, training and employment services; private guaranteed income; retirement pension plans and disability; group insurance. *Prereq.* 39.503. (Offered Winter Quarter) (Available at Boston and Burlington)

**45.522 Job Evaluation (2 q.h.)**

Wage-payment systems; theory of wage determination, job elements, rating scales, writing job descriptions and specifications; selection of plans; development of wage structures and integration with the principles of merit rating. (Offered Fall Quarter) (Available at Boston and Burlington)

**45.607 Personnel Management (Intensive) (6 q.h.)**

Organization, function, and procedures of the personnel department in relationship to the management organization; manpower selection; training; rating; per-

\*Upper level Business Administration course—see page 57.

sonnel policies, benefits, and reports. Principles and techniques of training; the psychology of learning; meeting training needs; principles and practices; organizing training activities. Controlling and coordinating the managerial responsibility of supervision; planning the work; employee assignments; employees' attitudes; employee grievances; administering company policies, developing work interest. (*Not open to students who have taken 45.513, 45.514, 45.515*) (Offered every quarter) (Available at Boston, Burlington, and Weymouth)

**45.641 Human Relations in Organizations (Intensive) (4 q.h.)**

An introduction to human problems of the work environment: motivation, employee participation, formal and informal organizations, and leadership patterns. The processes of communication: interviewing, counseling, appraisal of performance, and the accomplishment of change. Special employment groups and overview of the individual in his organization. (*Not open to students who have taken 45.511, 45.512.*) (Offered Fall and Winter Quarters) (Available at Boston and Burlington)

**45.691 Creative Problem Solving (2 q.h.)**

New ways of thinking are learned and practiced. Sensing and analyzing problems, producing ideas, evaluating and implementing solutions. The attitudes and climate conducive to creative thinking as well as common barriers will be presented. Provides methods for developing imagination which is the key part of the creative process. (Offered Fall and Spring Quarters) (Available at Boston only)

**49.536, 49.537, 49.538 Group Dynamics I, II, III (6 q.h.)**

Students explore the theoretical and practical applications of group dynamics to their current and future work situations. Outside readings, observation of groups, and journal-keeping techniques are employed to assist in class participation. Emphasis is placed upon the student as a group member, the understanding of group processes, and the individual as a change agent. (Available at Boston only)

## Quality Control and Management Sciences

*Consultant:* Prof. R. A. Parsons (College of Business Administration) 437-3255

**45.536 Principles of Material Inspection (2 q.h.)**

An operating and technical-level course involving mensuration, need and function of inspection and specifications; basic principles and techniques of measurement; various methods and equipment used for gauging and measuring; special measuring and inspection problems. (Offered Fall Quarter) (Available at Burlington only)

**45.561 Statistical Quality Control I (2 q.h.)**

Description and practical application of the basic statistical quality-control methods for quality assurance, quality control and quality improvement of products and services; the determination of process capability; the use of quality control charts for measurable and non-measurable quality characteristics. *Prereq.* 39.513. (Offered Fall Quarter) (Available at most campuses)

**45.562 Statistical Quality Control II (2 q.h.)**

Continuation of Statistical Quality Control I, covering the application of statistical and probability considerations in acceptance sampling of purchased material, work in process, and outgoing products. Methods of predicting sampling results using the hypergeometric, the binomial, and the poisson distributions; development of the operating characteristic curve for any sampling plan; risks involved in sampling and the concepts of AQL, RQL, AOQL. *Prereq.* 45.561. (Offered Winter Quarter) (Available at most campuses)

**45.563 Management of Quality Control (2 q.h.)**

Modern concepts of managing the quality function of a company to maximize customer satisfaction at minimum quality cost; the idea of total quality control; measurement of the cost of quality; development of a coordinated program of improvement, organizing for diagnosis the defect causes. (Offered Spring Quarter) (Available at most campuses)

**45.565 Industrial Experimentation I\* (2 q.h.)**

Modern small sample techniques are applied to industrial problems. Use of statistical inference to make estimates and set confidence intervals of key characteristics of production lots and processes; design of single and multiple factor experiments; tests of significance; analysis of variance. *Prereq.* 39.513. (Offered Winter Quarter) (Available at Burlington only)

**45.566 Industrial Experimentation II\* (2 q.h.)**

Tests of significance, analysis of variance; correlation techniques; experimental design; balancing and randomizing techniques; factorial designs; nested designs; Latin square; random balance/multiple-balance. *Prereq.* 45.565. (Offered Spring Quarter) (Available at Burlington only)

**45.608 Quality Control and Management (Intensive) (6 q.h.)**

Same as 45.561, 45.562, and 45.563. (*Not open to students who have taken these courses.*) *Prereq.* 39.513. (Offered Fall Quarter) (Available at Boston only)

**45.630 Introduction to Operations Research (2 q.h.)**

Decision making under uncertainty integration of classical statistics and decision theory with Bayesian concepts; decision tree analysis; preference curves. (Offered Fall Quarter) (Available at Boston and Burlington)

**45.631 Operations Research Applications I (2 q.h.)**

Mathematical programming; linear programming; graphical, vector, simplex, and transportation methods; the dual; degeneracy; integer programming; non-linear programming; dynamic programming. (Offered Winter Quarter) (Available at Boston and Burlington)

**45.632 Operations Research Applications II (2 q.h.)**

Special topics including model building, queuing theory, simulation, Pert-CPM, and game theory. (Offered Spring Quarter) (Available at Boston and Burlington)

**45.633 Advanced Quality Control I\* (2 q.h.)**

Detailed study of specialized techniques used in defect-cause diagnosis and problem analysis. Complete analysis of process capability; the multi-vari chart; pictograms; the span plan method. *Prereq.* 45.562. (Offered Fall Quarter) (Available at Boston only)

**45.634 Advanced Quality Control II\*** (2 q.h.)

Continuation of Advanced Quality Control I with special emphasis on design of control plans for process quality control and special cases of product acceptance. *Prereq.* 45.624. (Offered Winter Quarter) (Available at Boston only)

**45.692 Quality Control I, II (Intensive)** (4 q.h.)

Description and practical application of the basic statistical quality-control methods for quality assurance, quality control, and quality improvement of products and services the determination of process capability; the use of quality-control charts for measurable and non-measurable quality characteristics. The application of statistical and probability considerations in acceptance sampling of purchased material, work in process, and outgoing products. Methods of predicting sampling results using the hypergeometric, the binomial, and the poisson distributions; development of the operating characteristic curve for any sampling plan; risks involved in sampling and the concepts of AQL, RQL, AOQL. (Not open to students who have taken 45.561, 45.562.) *Prereq.* 39.513. (Offered Winter Quarter) (Available at Boston only)

## Law

*Consultant:* Mr. H. Olins, Esq., 482-6998

**45.541 Law I\*** (2 q.h.)

CONTRACTS: nature, kinds, and formation of contracts; essential elements; interpretation of contracts. (Available at most campuses)

**45.542 Law II\*** (2 q.h.)

AGENCY: nature, formation, and termination of agency relationships; rights and duties of principal and agent; scope of agent's authority.

SALES: nature of sales contracts; warranties; transfer of title; rights and remedies of seller and buyer. *Prereq.* 45.541. (Available at most campuses)

**45.543 Law III\*** (2 q.h.)

NEGOTIABLE INSTRUMENTS: bills, notes and checks; liabilities and defenses of parties; procedure upon dishonor; discharge.

BUSINESS ORGANIZATIONS: survey of corporations and partnerships. *Prereq.* 45.542. (Available at most campuses)

**45.643 Law (Intensive)\*** (6 q.h.)

CONTRACTS: nature, kinds, and formation of contracts; essential elements; interpretation of contracts.

AGENCY: nature, formation, and termination of agency relationships; rights and duties of principal and agent; scope of agent's authority.

SALES: nature of sales contracts warranties; transfer of title; rights and remedies of seller and buyer.

NEGOTIABLE INSTRUMENTS: bills, notes, and checks; liabilities and defenses of parties; procedure upon dishonor; discharge.

BUSINESS ORGANIZATIONS: survey of corporations and partnerships. (Not open to students who have taken 45.541, 45.542, 45.543.) (Offered every quarter) (Available at Boston, Burlington, and Weymouth)

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\*Upper level Business Administration course—see page 57.



**45.693 Law and Social Issues (2 q.h.)**

A study of the structure and dynamics of the American Legal System approached through an analysis of selected cases dealing with social issues. (Offered every quarter) (Available at Boston and Burlington)

## **Management Information Systems**

*Consultant:* Mr. T. J. McNamara 479-4949

*Associate Consultant:* (EDP) Mr. R. M. Morrison 742-4000

**45.570 Electronic Data Processing I (2 q.h.)**

An introduction to computers including the discussion of numbers and coding systems; examples of typical business problems; and study of basic programming concepts. (Offered every quarter) (Available at all campuses)

**45.571 Electronic Data Processing II (2 q.h.)**

A survey of available computer systems; price and performance comparison of available input, output, and storage media; discussion of filing and sorting techniques; and presentation of COBOL and other programming languages. *Prereq.* 45.570. (Offered every quarter) (Available at all campuses)

**45.572 Electronic Data Processing III (2 q.h.)**

A presentation of data communications concepts and terminals; discussion of business data processing and operations research applications; and a summary of trends in EDP. *Prereq.* 45.571. (Offered every quarter) (Available at all campuses)

**45.648 Electronic Data Processing (Intensive) (6 q.h.)**

An introduction to computers including the discussion of numbering and coding systems; examples of typical business problems; and study of basic programming concepts. A survey of available computer systems; price and performance comparison of available input, output, and storage media; discussion of filing and sorting techniques; and presentation of data communications concepts and terminals. A presentation of COBOL and other programming languages; discussion of business data processing and operations research applications; and a summary of trends in EDP. (*Not open to students who have taken 45.570, 45.571, 45.572.*) (Offered every quarter) (Available at Boston, Burlington, and Weymouth)

**45.675, 45.676 Electronic Data Processing (A), (B) (6 q.h.)**

An introduction to computers including the discussion of numbering and coding systems; examples to typical business problems; and study of basic programming concepts. A survey of available computer systems; price and performance comparison of available input, output, and storage media; discussion of filing and sorting techniques; and presentation of data communications concepts and terminals. A presentation of COBOL and other programming languages; discussion of business data processing and operations research applications, and a summary of trends in EDP. (Offered Spring Quarter) (Available at Boston only)

*Associate Consultant: (Programming) Mr. J. G. Sullivan 443-3122*

**45.599 Basic Computer Programming (2 q.h.)**

A one-quarter survey course in introductory computer programming for business students. Fundamentals of programming are introduced along with COBOL, Common Business Oriented Language. The divisions of COBOL, Data File Structure, verb actions are studied. Each student will prepare and check out programs using the University's Computer Center. *Prereq.* 45.572. (Offered every quarter) (Available at all campuses)

**45.573 Computer Programming for Business I (2 q.h.)**

Fundamentals of business application programming: Introduction to COBOL, Common Business Oriented Language, adopted as standard business programming language of EDP industry. Principles of flowcharting. Programs prepared by student are run and checked out using the University's Computer Center. *Prereq.* 45.572. (Offered Fall and Winter Quarters) (Available at most campuses)

**45.574 Computer Programming for Business II (2 q.h.)**

Programming in COBOL presented in more detail. Business data-processing functions of editing, file updating, report writing are illustrated and implemented in programs prepared by students and run on University's Computer. Programming involves punched card input and line printer output. *Prereq.* 45.573. (Offered Winter and Spring Quarters) (Available at most campuses)

**45.575 Computer Programming for Business III (2 q.h.)**

More sophisticated programming techniques as applied to the solution of more complex business application problems. Random access disk file organization and processing is illustrated. Disk and magnetic tape files are utilized in problem solving. *Prereq.* 45.574. (Offered Spring and Summer Quarters) (Available at most campuses)

**45.617 Advanced Computer Programming I\* (2 q.h.)**

Introduction to assembler language programming using the University's Computer Center. Organization, representation, and processing data within the computer. Looping, instruction modification, indexing, indirect addressing and data retrieval are introduced. cursory survey of assembler languages in general. *Prereq.* *Demonstrate familiarity with any currently available computer language.* (Available at Boston only)

**45.618 Advanced Computer Programming II\* (2 q.h.)**

Further exploration of assembler language techniques, other addressing structures, floating point techniques, coding and use of macro instructions. Input/output routines, use of operating system for job scheduling, resource allocation, file handling. Business problems analyzed, flowcharted, programmed, and debugged on University's computer by students. Debugging of problems by core dump analysis. *Prereq.* 45.617. (Available at Boston only)

**45.619 Advanced Computer Programming III\* (2 q.h.)**

Utilization of business data processing hardware on University's computing system. Further use of operating system, divide independent file handling. Blocked and unblocked file manipulation. Application of assembler language to a sophisticated programming project. *Prereq.* 45.618. (Available at Boston only)

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\*Upper level Business Administration course—see page 57.

**45.644 Computer Programming for Business (Intensive) (6 q.h.)**

Fundamentals of business application programming: Introduction to COBOL, Common Business Oriented Language, adopted as standard business programming language of EDP industry. Principles of flowcharting. Programs prepared by students are run and checked out using the University's Computer Center. Programming in COBOL presented in more detail. Business data processing functions of editing, file updating, report writing are illustrated and implemented in programs prepared by students and run on the University's computer. Programming involving punched card input and line printer output. *Prereq.* 45.572. (*Not open to students who have taken 45.573, 45.574, 45.575.*) (Offered Winter Quarter) (Available at Boston and Burlington)

**45.677 Operating Systems I (2 q.h.)**

Survey type course—describing operating systems and investigating the full range of systems services available under computer operating systems. Special emphasis is placed on their value as tools for developing management information. (Note: This quarter could stand alone as management tool for decision making.) *Prereq.* 45.575. (Available at Boston only)

**45.678 Operating Systems II (2 q.h.)**

Specific Software covered will be systems supervisor, data management system, FORTRAN, COBOL, PL/1, and special purpose compilers. Also investigated will be operating systems which accommodate network analysis, Pert systems, simulation packages, and statistical analysis packages. *Prereq.* 45.677. (Available at Boston only)

**45.679 Operating Systems III (2 q.h.)**

Detail analysis on data management systems with specific case studies and development of operating system programs. *Prereq.* 45.678. (Available at Boston only)

**45.680 Computer-Communications Systems Design and Analysis I (2 q.h.)**

An introduction into data communications as seen from the systems and applications viewpoints. Discussions of the various types of terminals: Teletype-like, CRTs, Banking, programmable. Discussions of the various line disciplines with detail examination of one or more. An overview of terminal usage with time sharing, transaction processing, and network processing. *Prereq.* 45.575. (Available at Boston only)

**45.681 Computer-Communications Systems Design and Analysis II (2 q.h.)**

Discussions and studies of access methods for communications and USER visibility to terminals; introduction to the COBOL communication facility; introduction to and detail discussion of Front End Processors and Remote Network Processors with emphasis on functionality. *Prereq.* 45.680. (Available at Boston only)

**45.682 Computer-Communications Systems Design and Analysis III (2 q.h.)**

Discussion of the communications aspects of Transaction processing. Case studies are used to illustrate alternative approaches. Presentation and usage of the functional approach to information network design. *Prereq.* 45.681. (Available at Boston only)

**45.684 RPG Programming (2 q.h.)**

Provides a working knowledge of the Report Program Generation language. This language is suited to small scale computer usage for such tasks as: Report Generation; File Up-dating; utility functions. Students will prepare and debug class problems using the RPG of their choice. (Offered every quarter) (Available at Boston, Burlington, Weymouth, and Norwood)

**45.685 Computer Programming for Scientific Applications I\* (2 q.h.)**

Designed to provide the student with a working knowledge of FORTRAN, the modern problem-oriented computer language. Enables the professional to understand the use of a computer in solving problems in business, mathematics, and the social and physical sciences by introducing him to problems in selected applications, and illustrating use of FORTRAN in finding solutions. *Prereq.* 45.572. (Available at Boston only)

**45.686 Computer Programming for Scientific Applications II\* (2 q.h.)**

The course provides the student with practical experience in the use of FORTRAN in solving significant problems in business, mathematics, and the social and physical sciences. Problems of sufficient complexity will be used to allow the student to actively participate in the various steps necessary to analyze, define, document, and solve the problem using FORTRAN. *Prereq.* 45.685. (Available at Boston only)

**45.687 Computer Programming for Scientific Applications III\* (2 q.h.)**

A sophisticated set of problems are presented to teams of students for solution. Consultations with instructor allows students to actively participate in solving problems with the use of FORTRAN. *Prereq.* 45.686. (Available at Boston only)

**49.530 Privacy and Security (2 q.h.)**

A clarification of the issues of computer privacy, security, and confidentiality with emphasis on computer security. Review of past violations of privacy, security, and potential threats. Development of security approaches, techniques, and methods of implementing security. *Prereq.* 45.572. (Offered Fall and Winter Quarters) (Available at Boston and Burlington)

**49.531 Data Base Systems (2 q.h.)**

An introduction to data-base approach to the design of integrated information applications. Data-base design, data structures, diagramming, CODASYL data definition language, data manipulation language, data-base implementation and evaluation. *Prereq.* 45.575, 45.588. (Offered Fall and Winter Quarters) (Available at Boston and Burlington)

**49.532 Minicomputer Systems in Business I\* (2 q.h.)**

An introduction to the application of minicomputers in the business environment. Topics covered include: analysis of cost/performance; systems consideration of minis versus alternatives; role of minis in a variety of applications such as: time sharing, intelligent terminals, data entry and gathering, data communications, and others. Emphasis is placed on evaluation of minis as cost-effective elements of a business system. *Prereq.* 45.573, 45.591. (Available at Boston and Burlington)

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\*Upper level Business Administration course—see page 57.

**49.533 Minicomputer Systems in Business II\*** (2 q.h.)

Development of system specifications, functional configurations, system trade-offs, site preparation, and maintenance considerations. Detailed analysis of systems with specific case studies related to business applications. *Prereq.* 49.532.

**49.534 Minicomputer Systems in Business III\*** (2 q.h.)

Minicomputer programming fundamentals; source and object programs; assemblers; compilers; high-level languages; and operating systems. *Prereq.* 45.703. *Coordinator:* Mr. R. E. Anderson, 862-6831

**45.577 Data Systems Administration** (2 q.h.)

The major phases involved in the study and detailed planning for the effective use of data processing equipment and management sciences in meeting the information needs of business are presented, including the analysis of company objectives, the feasibility study, the system specifications, equipment selection, and the implementation of the new system. *Prereq.* 45.572 (Offered Fall Quarter) (Available at Boston, Burlington, and Weymouth)

**45.578 Business Data Processing Applications I** (2 q.h.)

Each student is given an opportunity to understand and perceive a company as a total operating system. Specific systems applications examined include inventory control, purchasing, accounts payable, and their integration. Specific techniques on data collection including data communications are dealt with during the quarter. A field trip to a communications training center and a team case study project complete the quarter. *Prereq.* 45.577. (Offered Winter Quarter) (Available at Boston, Burlington, and Weymouth)

**45.579 Business Data Processing Applications II** (2 q.h.)

A continuation of 45.578 covering additional information systems of accounts receivable, sales analysis, the design of integrated systems, a review of "on-line" systems, and computer system simulation. The opportunity to participate in a computer simulation exercise is offered during a field trip. A team case study project completes the quarter. *Prereq.* 45.578. (Offered Spring Quarter) (Available at Boston, Burlington, and Weymouth)

**45.586 System Design and Techniques I** (2 q.h.)

Introduction to system concepts, system department organization, forms design, systems controls, and manuals. *Prereq.* 45.503 or 45.572. (Available at Boston, Burlington, Weymouth, Norwood and Revere)

**45.587 System Design and Techniques II** (2 q.h.)

Development of system techniques through lectures and case studies, including work simplification, work measurement, flowcharting, system cost estimating, and system development. *Prereq.* 45.586.

**45.588 System Design and Techniques III** (2 q.h.)

Application of system techniques through extensive use of case studies covering the full spectrum of system development and design. *Prereq.* 45.587.

\*Upper level Business Administration course—see page 57.

**45.589 Advanced Business System Design I\*** (2 q.h.)

Introduction to total computer-based system concepts, resource management, functional data flows, information feedback process, and major design criteria.

*Prereq.* 45.588. (Available at Boston and Burlington only)

**45.590 Advanced Business System Design II\*** (2 q.h.)

Detailed analysis of a manufacturing company's business system design, focusing on data base design and subsystem relationships between order entry, production control, and inventory control. *Prereq.* 45.589.

**45.591 Advanced Business System Design III\*** (2 q.h.)

Management information system design, including the impact of advanced capabilities such as data communication, on-line file storage, and simulation on the design and system approach. *Prereq.* 45.590.

**45.592 Advanced Computer System Techniques I\*** (2 q.h.)

On-line data communication systems covering the range of services available, remote input and output devices, techniques of control, and application examples. *Prereq.* 45.591. (Available at Boston and Burlington only)

**45.593 Advanced Computer System Techniques II\*** (2 q.h.)

On-line mass storage devices, data-base design, and file retrieval techniques. Real-time input-output techniques including visual and graphic displays. *Prereq.* 45.592.

**45.594 Advanced Computer System Techniques III\*** (2 q.h.)

Timesharing system concepts, design, and languages. Application of on-line and timesharing system techniques through case studies and field trips. *Prereq.* 45.593.

**45.616 Government Data Processing Applications I** (2 q.h.)

Discusses the basic role of data processing in the current governmental activities in education (including computer assisted instruction), health (including patient care), welfare (including urban planning), information (including graphic storage and retrieval systems) through description of scientific advanced systems and equipment. *Prereq.* 45.572. (To be offered 1976-1977)

**45.653 Government Data Processing Applications II** (2 q.h.)

Describes principal applications and specific advanced system designs and equipment which have been employed successfully by various levels of government in the fields of public administration, planning, finance, law enforcement and judicature, communication, and integrated information bases. *Prereq.* 45.616.

**45.655 Auditing Data Processing Applications I** (2 q.h.)

A general presentation of auditing techniques used when auditing typical electronic data processing installations. Functional assignment of duties within an electronic data processing installation. Control over input/output and over data processing. Methodology of safeguarding record files, both physical and against unauthorized use. *Prereq.* 45.572. (No longer offered as single-quarter course)

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\*Upper level Business Administration course—see page 57.

**45.656 Auditing Data Processing Applications II (2 q.h.)**

A continuation of auditing applications when reviewed for internal control, hardware checks, system checks, and audit trail. Auditing around the computer versus through the computer. Using the computer to test the data processing system and also the records produced by the computer system. Auditing advanced data processing systems. *Prereq.* 45.655.

**45.658 Retail Marketing and Distribution Data Processing Applications I (2 q.h.)**

Analyzes the unique characteristics of the retail application including high volume of transactions, low unit value, decentralized input, short-term employees, multi-level reporting and their effects on the EDP systems requirements in each of the classical areas of the organization. *Prereq.* 45.572. (To be offered 1976–1977)

**45.659 Retail Marketing and Distribution Data Processing Applications II (2 q.h.)**

Develops the systems considerations of the first quarter further into the requirements of an overall, integrated management information system for retail. *Prereq.* 45.658.

**45.661 Banking Data Processing Applications I (2 q.h.)**

Reviews the major functions of banking, deposit loan, and money, and analyzes their uniqueness from an EDP point of view in the applications of demand deposit accounting, commercial and installment loan accounting, bank credit card accounting, and credit file maintenance. *Prereq.* 45.572. (To be offered 1976–1977)

**45.662. Banking Data Processing Applications II (2 q.h.)**

Expands on first quarter by analyzing mortgage accounting, savings accounting, mutual fund and stock transfer accounting, personal trust accounting, new remote terminals and the development of management information systems for commercial banks and thrift institutions. *Prereq.* 45.661.

**45.664 EDP in Property and Casualty Insurance I (2 q.h.)**

A survey of the various functions unique to property and casualty industry and the role of data processing as applied to the particular functions: underwriting, policy production claims, and actuarial. *Prereq.* 45.572. (To be offered 1976–1977)

**45.665 EDP in Property and Casualty Insurance II (2 q.h.)**

Application of the principles surveyed in the first quarter to one or more case studies developing an information system for property and casualty company management. *Prereq.* 45.664.

**45.668 Peripheral Systems Techniques I (2 q.h.)**

This course deals with the many peripheral skills and techniques which the modern analyst must employ in his daily activities. Specific areas to be covered include the systems approach to decision making, interviewing, preparing and presenting proposals to executive management, techniques of documentation. *Prereq.* 45.573. (Offered Winter Quarter) (Available at Boston and Burlington only)

**45.669 Peripheral Systems Techniques II (2 q.h.)**

A continuation of 45.668. This course will cover such topics as the impact of the systems analyst as a trainer; organizational employers of third generation computers; control and systems auditing; and the establishment of data processing standards. *Prereq.* 45.668. (Offered Spring Quarter) (Available at Boston and Burlington only)

**45.694 Systems Design and Techniques (Intensive) (6 q.h.)**

Introduction to system concepts, system department organization, forms design, systems controls, and manuals. Development of system techniques through lectures and case studies, including work simplification, work measurement, flowcharting, system cost estimating, and system development. Application of system techniques through extensive use of case studies covering the full spectrum of development and design. (*Not open to students who have taken 45.586, 45.587, 45.588.*) *Prereq.* 45.503 or 45.572. (Offered Spring and Summer Quarters) (Available at Boston and Burlington only)

**45.697 Information Processing In Medicine I (2 q.h.)**

A non-technical survey of the impact and potential of computers in medicine: medical records; clinical reporting systems; automated laboratories; on-line monitoring; research needs; medical administration requirements. *Prereq.* none. (Offered Fall Quarter) (Available at Boston only)

**45.698 Information Processing in Medicine II (2 q.h.)**

Analysis of the content and interactions of medical information sub-systems. Implications of computerization of various medical activities; equipment selection; organizational considerations. *Prereq.* 45.697. (Offered Winter Quarter)

**49.535 Auditing Data Processing (Intensive) (4 q.h.)**

Replaces former courses 45.655 and 45.656. A general presentation of auditing techniques used when auditing typical EDP installations. Functional assignment of duties within an EDP installation. Control over input and output, and processing itself. Methodology of safeguarding record files against physical and/or unauthorized use. *Prereq.* 45.572. (Offered every quarter) (Available at Boston and Burlington only)

## 47—REAL ESTATE

*Consultant:* Mr. G. D. Prigmore, 536-2474

**47.501 Real Estate Fundamentals I (2 q.h.)**

An introduction to the fundamentals of real estate including basic terminology and various types of purchase contracts. Real estate brokerage and leasing fundamentals in commercial, office, and residential properties will also be explored. (Offered every quarter) (Available at most campuses)

**47.502 Real Estate Fundamentals II (2 q.h.)**

A general examination of real property management with emphasis on the special characteristics of different types of property, along with introduction to valuation of property, including analysis of operating statements. *Prereq.* 47.501 or permission of instructor.



**47.503 Real Estate Fundamentals III (2 q.h.)**

Real Estate financing will be explored with respect to the various types of institutions involved in the financing of different properties, including interim, permanent, and secondary financing. Specific case studies will also be used. *Prereq.* 47.502 or *permission of instructor.*

**47.504 Real Estate Fundamentals (Intensive) (6 q.h.)**

Same as 47.501, 502 and 503. (*Not open to students who have taken those courses.*) (Offered Summer Quarter)

**47.508 Real Estate Financial Analysis I (2 q.h.)**

Structure and analysis of real estate income and expense statements. Sources of funds, borrowing methods, effects of taxation, rates of return, etc. *Prereq.* 47.503 or *permission of instructor.* (Offered Fall Quarter) (Available at Boston and Burlington only)

**47.509 Real Estate Financial Analysis II (2 q.h.)**

Analysis of risks and problems involved in financing real property with emphasis on use of case studies and problems. Class participation stressed. *Prereq.* 47.508 or *permission of instructor.* (Offered Winter Quarter)

**47.511 Fundamental Real Estate Appraisal (2 q.h.)**

A fundamental course in real estate appraisal with emphasis on single- and two- and three-family properties. Analysis of city and neighborhood influences, site valuation, building diagnosis, depreciation; study of the applicable approaches to value, appraisal report preparation. *Prereq.* 47.503 or *permission of instructor.* (Offered Fall Quarter) (Available at Boston and Burlington only)

**47.512, 47.513 Advanced Real Estate Appraisal I and II (4 q.h.)**

An advanced course in the evaluation of residential and income properties. Application of the cost, market, and income approaches to apartment buildings and commercial and industrial developments. Particular emphasis on the various methods of capitalization and residual techniques. Class participation in case studies and problems. *Prereq.* 47.511, 47.512, or *permission of instructor.* (Offered Winter Quarter) (Available at Boston and Burlington only)

**47.521 Real Estate Development (2 q.h.)**

Analysis of the problems in real estate development using the case method. Emphasis on the risks and opportunities which face developers in the planning, marketing, construction, and financing of apartments, shopping centers, and office buildings. *Prereq.* 47.509 or *permission of instructor.* (Offered Spring Quarter) (Available at Boston and Burlington only)

**47.524 Private Real Estate Law (2 q.h.)**

Elements of a real estate contract and its enforceability; the concept of title; mortgages and their purposes; recording of real estate interests; the landlord and tenant relationship. *Prereq.* 47.503 or *permission of instructor.* (Offered Fall Quarter) (Available at Boston only)

**47.525, 47.526 Public Real Estate Law I and II (4 q.h.)**

This course will focus on zoning, subdivision control, conservation controls,

taxation of real estate, rent control, eminent domain, and urban renewal. *Prereq.* 47.503, 47.525, or *permission of instructor.* (Offered Winter and Spring Quarters) (Available at Boston only)

#### **47.527 Housing (2 q.h.)**

A specialized course dealing with the demand for housing and the ability of the private market to meet the demand. Particular emphasis placed on public programs dealing with housing via the private sector. *Prereq.* 47.509 or *permission of instructor.* (To be offered 1976–1977)

#### **47.528, 47.529, 47.530 Real Estate Management I, II, III (6 q.h.)**

A course designed to prepare the student for the practical problems of real estate management. The course stresses the requisite day-to-day management of commercial, industrial, and residential properties as well as the need for a management strategy as it relates to long-term property value. *Prereq.* 47.503 or *instructor's permission* (Available at Boston and Burlington only)

### **48—TRANSPORTATION & PHYSICAL DISTRIBUTION MANAGEMENT**

*Consultant:* Dr. R. C. Lieb (College of Business Admin.) 437-3236

#### **48.514 Elements of Transportation and Distribution I (2 q.h.)**

An introduction to regulatory, economic, and management aspects of transportation from the viewpoints of shippers, government, and carrier managers. Topics include: costs, rates, operations, entry, mergers, intercity passenger and urban transportation. A course of general interest to students of business, law, or government. *Prereq. for all other courses in transportation.* (Not open to students who have completed courses 48.501, 48.502, 48.503.) (Available at Boston, Burlington, Weymouth, and Norwood)

#### **48.515 Elements of Transportation and Distribution II (2 q.h.)**

An introduction to physical distribution management concepts. Topics include marketing, locational strategy, organization, inventory control, forecasting, and cost control. Course uses text and case materials developed from industry situations. *Prereq.* 48.514. (Not open to students who have completed courses 48.501, 48.502, 48.503.)

#### **48.516 Elements of Transportation and Distribution III (2 q.h.)**

Continued examination of the major elements of the physical distribution mix. Topics include: information flow, data processing, warehousing, and labor relations. Cases include application of the "total cost" approach to physical distribution. *Prereq.* 48.515. (Not open to students who have completed courses 48.501, 48.502, 48.503.)

#### **48.504 Transportation Regulation and Promotion I (2 q.h.)**

Study of the history and content of the Interstate Commerce Act. *Prereq.* 48.527, 48.514, or *former course numbers* 48.503 and 48.526. (Available at Boston only)

#### **48.505 Transportation Regulation and Promotion II (2 q.h.)**

Examination of administrative law and procedure, the code of ethics, and the general rules of practice. *Prereq.* 48.504.

**48.506 Transportation Regulation and Promotion III (2 q.h.)**

Analysis of cases pertinent to the Commerce Clause. Preparation for ICC Practitioners Exam. *Prereq.* 48.505.

**48.527 Traffic Management I—Rates and Tariffs (2 q.h.)**

A practical course in the interpretation and use of tariffs. Topics include classifications, rate scales, tariff rules, rate-making procedures, etc. *Prereq.* 48.514 or former course numbers 48.501, 48.502, 48.503. (Not open to students who have taken former course numbers 48.524, 48.525, 48.526.) (Available in Boston only)

**48.528 Traffic Management II—Rates and Tariffs (2 q.h.)**

An advanced course in the interpretation and use of tariffs. Topics include ICC law and practice, and computerized tariffs. *Prereq.* 48.527. (Not open to students who have taken former course numbers 48.524, 48.525, 48.526.)

**48.529 Traffic Management III—Selected Topics (2 q.h.)**

A practical course in traffic management covering topics other than rates and tariffs. Subjects include: routing, claims, insurance, consolidation, packaging, etc. Course uses cases and text. *Prereq.* 48.514 or former course numbers 48.501, 48.502, 48.503. (Not open to students who have taken former course numbers 48.524, 48.525, 48.526.)

**48.534 Surface Transportation I—Railroad Management (2 q.h.)**

A management-oriented course that considers the current and future status of the railroads. Topics include investment and finance, mergers, marketing, labor relations, operations and control, diversification, and public policy. *Prereq.* 48.514 or former course numbers 48.501, 48.502, 48.503. (Replaces former course number 48.511 and 48.512.) (Offered Fall Quarter) (Available at Boston only)

**48.535 Surface Transportation II—Motor Carrier Management (2 q.h.)**

A management-oriented course that considers the current and future status of the regulated motor-carrier industry. Topics include: equipment selection and finance, mergers, marketing, labor relations, routes, operations and control, and public policy. *Prereq.* 48.514 or former course numbers 48.501, 48.502, 48.503. (Replaces former course numbers 48.517, 48.518.) (Offered Winter Quarter) (Available at Boston only)

**48.536 Surface Transportation III—Marine Transportation Management (2 q.h.)**

A management-oriented course that considers the current and future status of the U.S. Merchant Marine. Topics include: international trade patterns, government promotion and subsidy, technological innovations, port facilities, and labor relations. *Prereq.* 48.514 or former course numbers 48.501, 48.502, 48.503. (Replaces former course number 48.513.) (Offered Spring Quarter) (Available at Boston only)

**48.537 Surface Transportation IV—Private Trucking Management (2 q.h.)**

Initiating a private trucking operation. Topics include legality, purchase vs lease of equipment, operations, and measures of performance. *Prereq.* 48.514 or former course numbers 48.501, 48.502, 48.503. (Replaces former course number 48.519.) (Offered Spring Quarter) (Available at Boston only)

**48.538 Management of Warehouse Operations (2 q.h.)**

A practical course in the management of warehouses. Topics include: site selection, construction, finance, operations, measurement of performance, and warehouse technology. *Prereq.* 48.514, 48.515, 48.516. (*Replaces former course number 48.521.*) (Offered Fall Quarter) (Available at Burlington only)

**48.539 Organization and Control of Physical Distribution Management (2 q.h.)**

Establishment of a physical distribution organization. Measuring performance. Interrelationships with other functions in the company. Interpersonal relations. *Prereq.* 48.514, 48.515, 48.516. (*Replaces former course number 48.522.*) (Offered Winter Quarter) (Available at Burlington only)

**48.540 Management Science and Physical Distribution Management (2 q.h.)**

Application of quantitative techniques to physical-distribution management, including: linear programming, simulation, and statistical decision theory. Students will use computer facilities for solving problems. (*Knowledge of programming is not required.*) *Prereq.* 48.514, 48.515, 48.516, or 10.539 (math), or equiv. (*Replaces former course number 48.523.*) (*Not offered 1975–1976*)

**48.541 Air Transportation Management I (2 q.h.)**

Economics and regulation of Civil Aeronautics Board certified commercial passenger aviation—including routes, schedules, operations, pricing, mergers, cost analysis, and financing. Case method of instruction emphasized. *Prereq.* 48.514. (Available at Boston only)

**48.542 Air Transportation Management II (2 q.h.)**

Similar topics as 48.541, but for cargo operations. *Prereq.* 48.541.

**48.543 Air Transportation Management III (2 q.h.)**

Economics and regulation of general aviation including analysis of corporate, air taxi, and third-level operations. *Prereq.* 48.542.

**48.547 Urban Transportation I (2 q.h.)**

The planning and financing of urban transportation systems. Role of federal, state, and local governments. Choice of technology and method of financing. The concept of "balanced" transportation. *Prereq.* 48.514. (*Replaces former course number 48.544.*) (Offered Fall Quarter) (Available at Boston only)

**48.548 Urban Transportation II (2 q.h.)**

Management of urban transportation systems. Topics include: routes and services, pricing, labor relations, selection of equipment, community relations, and measures of performance. *Prereq.* 48.547. (*Replaces former course numbers 48.545, 48.546.*)

**48.549 Seminar in Selected Transportation and Physical Distribution Management Topics (2 q.h.)**

A seminar which focuses on a topic of particular interest during the academic year, for example, reappraisal and formulation of National Transportation Policy, labor relations in transportation, ecology and transportation, etc. The seminar will utilize speakers and published materials and will require a written or oral presentation by the students at the end of the course. The seminar topic will

be announced during the academic year in time for registration for the Spring Quarter. *Prereq.* 48.514. (Offered Spring Quarter) (Available at Burlington only)

**48.600 Seminar in Northeast Corridor Transportation** (2 q.h.)

Analysis of the demand for and supply of passenger and freight transportation in the Northeast Corridor. Topics include: government policy, technology, carrier strategy, the consumer, and interrelationships between transportation and economic activity. Students make a presentation of their research findings at the end of the course. This course should be of interest to students of business, government, engineering, economics, and planning. *Prereq.* 48.514 and 10.539 (*math*), or *equiv.* (Offered Spring Quarter) (Available at Boston only).

## 50—EDUCATION FOUNDATIONS

**50.111 Social Science I** (3 cl., 3 q.h.)

Cultural anthropology and education. Theories and concepts in cultural anthropology will be studied with primary emphasis on their relevance to informal and formal aspects of educational processes. Considerable attention will be devoted to the study of cross-cultural materials in order to understand the educational process in different cultural milieus.

**50.112 Social Sciences II** (3 cl., 3 q.h.)

Sociology and education. Involves sociological analysis of the educational enterprise in the United States and other technologically advanced societies, including consideration of the socialization process, the formation of youth cultures, and the function of the schools in these contexts. Attention will be given to the study of the effects of stratification, ethnic, and racial factors on educational institutions, education and social change, and the school as a social system.

**50.113 Social Science III** (3 cl., 3 q.h.)

Intergroup relations and education. Examination of theoretical and empirical materials relative to the problem of intergroup relations and prejudice. Particular attention will be paid to the role of education in the reduction of intergroup conflict.

**50.121 Human Development and Learning I** (4 cl., 4 q.h.)

Developmental processes from prenatal life up to adolescence, theories of learning and personality, with research and case material covering major aspects of psychological development.

**50.131 Human Development and Learning II** (4 cl., 4 q.h.)

Continuation of Human Development and Learning I. Significant aspects of adolescence—physical, social, and psychological factors as they influence adolescent behavior. *Prereq.* 50.121.

**50.141 Measurement and Evaluation** (4 cl., 4 q.h.)

The fundamentals of measurement; basic statistical concepts and techniques used; evaluation of standardized and teacher-made tests. *Prereq.* *Methods and Materials* course in major field.

**50.151 Backgrounds of American Education** (4 cl., 4 q.h.)

Historical and philosophical foundations of American education beginning with old-world origins; development of American schools and educational thought from the Colonial period to the present with emphasis on major current issues in education. *Prereq.* 50.141.

**51—EDUCATION — INSTRUCTION**

**51.135 Analysis of Teaching and Educational Process** (4 cl., 4 q.h.)

The relationships that exist between instructional objectives and teaching behavior; applications of human development and learning concepts as they relate to subsequent specialized teaching methods and materials. Research results and promising theory are used to extend the prospective teacher's concepts of the teaching function. *Prereq.* 50.131.

**51.143 Methods and Materials of Teaching English** (4 cl., 4 q.h.)

An introduction to the structure and functions of language as they apply to the teaching of English; curriculum and planning in English; the unit approach; specific techniques of teaching reading and literature, grammar and usage, written and oral composition, listening, spelling, vocabulary, and the use of mass media. *Prereq.* 51.135.

**51.151 Student Teaching with Related Seminar** (8 q.h.)

A University-arranged practicum of observation and teaching in schools within reasonable commuting distance of Northeastern. Participating on a full-time basis, the student is expected to develop planning and communication abilities within his major field. Biweekly seminars at the University provide additional opportunity to analyze theory-practice relationships and to examine generic problems of teaching. *Prereq.* *Permission of adviser.*

**54—EDUCATION — READING**

**54.126 Teaching Reading in Secondary Schools** (4 cl., 4 q.h.)

For English and social studies majors in the College of Education who are preparing for teaching in the junior or senior high schools. Basically the same approach and organization applies to this course as to the elementary level course.

**63—THERAPEUTIC RECREATION SERVICES**

**63.501 Introduction to Therapeutic Recreation Services** (2 q.h.)

Philosophy and scope of modern recreation and its role in society.

**63.505 The Nursing Home Experience** (2 q.h.)

Exchange of empirical data relating to case experiences and institutional procedures encountered by activity leaders and other practitioners in nursing homes. Feasibility of functional innovations will be discussed in relation to present practices.

**63.510 Philosophy of Recreation and Leisure (2 q.h.)**

Goals for American recreation studied in modern context; implications for the professional; historical background, concepts of work, leisure, recreation; trends, issues, and future direction.

**63.521 Recreational Skills I (Social Recreation) (2 q.h.)**

Techniques of leadership, planning, and motivation for social-recreation activities; mixers, table games, active and inactive group games, adapting and creating games.

**63.522 Recreation Skills II (Music Therapy) (2 q.h.)**

Theory and practical application of music activities in special therapeutic settings.

**63.523 Recreation Skills III (Guitar or Autoharp) (2 q.h.)**

An introductory course in tablature reading; designed to develop personal skills for accompaniment of group singing.

**63.524 Recreation Skills IV (Intermediate Guitar) (2 q.h.)**

Development of performance versatility and art of improvisation for students who either have completed Recreation Skills III or who possess basic competence with the instrument.

**63.531 Techniques of Recreation Leadership (2 q.h.)**

Study and practical experience in a diversity of group programs and processes.

**63.532 Interagency Planning for Community Action (2 q.h.)**

A study of agencies and how they function (program and personnel); how agencies cooperate for interagency programming. Legal and financial aspects and their effect on the program.

**63.535 Recreation Skills VI (Special Events and Programs) (2 q.h.)**

How to organize and administrate tournaments for selected activities; checkers, chess, card games, table games, party planning, and techniques.

**63.540 Analysis of Movement as Applied to Recreation I (2 q.h.)**

The identification of muscles and muscle groups that may be involved in therapeutic recreation activities, which will enable the student to select the most suitable activity for a given disability. Includes analysis of movement and a review of muscle attachment and action.

**63.541 Analysis of Movement as Applied to Recreation II (2 q.h.)**

Continuation of 63.540. *Prereq.* 63.540 or *equiv.*

**63.547 Outdoor Education for Handicapped (2 q.h.)**

Technical training and experiences for adapted recreation and education for exceptional and handicapped age groups.

**63.549 The Process of Aging (2 q.h.)**

The experience and viewpoints from leading professional people—from the fields of medicine, psychiatry, sociology, nursing, rehabilitation, research, counseling, education, and recreation—related to the process of aging.

**63.550 Group Dynamics I (2 q.h.)**

The group process; how groups arrive at group identity; factors influencing size, purpose, behavior patterns, selections of individual members; training and experience in leadership techniques.

**63.551 Group Dynamics II (2 q.h.)**

A continuation of Group Dynamics I. *Prereq.* 63.550.

**63.552 Leadership and Program for Ill, Aged, and Infirm (2 q.h.)**

The scope of program planning and leadership in a variety of activities including adapted square dances, drama and puppetry, developing a rhythm band, parties and special events, active and quiet games, and others.

**63.553 Techniques and Resources in Working with Elderly (2 q.h.)**

Course on how to deal with day-to-day problems such as the ability to converse or understand different languages; understanding diseases and disabilities of the aged; techniques in assisting the blind or deaf; sensitivity training and sources of assistance in these areas.

**63.555 Therapeutic Recreation for Special Groups (2 q.h.)**

Concentrated study and individual projects in areas of special interest; mentally retarded, handicapped, aging, culturally deprived, socially atypical, others.

**63.556 Workshop in Adapted and Hospital Recreation (2 q.h.)**

Investigation in depth of basic and recent developments in adaptive and hospital recreation. Reports, discussions, observations, and visitations.

**63.557 Recreation Activities of Atypical Individuals and Groups (2 q.h.)**

Adaptation of recreational activities to meet the needs of handicapped individuals in hospitals and other organizations offering recreation programs for handicapped. Emphasis on the basic principles of recreational therapy.

**63.559 Group Dynamics (Intensive) (4 q.h.)**

The group process: how groups arrive at group identity; factors influencing size, purpose, behavior patterns, selections of individual members; training and experience of leadership techniques. (*Equiv. to Group Dynamics I & II*)

**63.560 Development and Utilization of Recreation Education Resources (2 q.h.)**

Survey of field and audiovisual education and resources; instruction and practice in the use of equipment and materials.

**63.565 Social and Psychological Impacts of Disabilities I (2 q.h.)**

An interdisciplinary approach to social and psychological understanding of the impact of disabilities and handicaps, enabling the activity leader to evaluate and understand behavioral changes in a handicapped population.

**63.566 Social and Psychological Impacts of Disabilities II (2 q.h.)**

Continuation of 63.565. *Prereq.* 63.565 or *equiv.*

**63.567 Social and Psychological Impacts of Disabilities (Intensive) (4 q.h.)**

The equivalent of 63.565 and 63.566.



**63.570 Arts and Crafts I (2 q.h.)**

Opportunities to learn and to teach in various media: clay, paper, crayon, paint, print, leather, wood, metal, yarn, natural and scrap materials; emphasis on creativity.

**63.571 Arts and Crafts II (2 q.h.)**

Course is geared to teach design skills and craft skills at the same time. Present the basic elements of design to plaster, stone, metal, papier-mache, clay, wood, wire, cloth, and wax, and exploit the qualities of each medium. *Prereq.* 63.570 or equiv.

**63.572 Arts and Crafts III (2 q.h.)**

Continuation of Arts and Crafts II. *Prereq.* 63.571 or equiv.

**63.573 Arts & Crafts (Intensive) (4 q.h.)**

Opportunities to learn and teach the various media: clay, paper, crayon, paint, print, leather, wood, metal, yarn, natural and scrap materials; emphasis on creativity. Course is geared to teach design skills and craft skills at the same time. Present the basic elements of design to plaster, stone, metal, papier-mache, clay, wood, wire, cloth, and wax, and exploit the qualities of each medium. (*Equiv. to Arts and Crafts I and II*)

**63.592 Independent Study (3 q.h.)**

Independent study designed for the individual specific needs. Field assignments in nursing homes for practical experience. Special and specific assignments. *Prereq.* 63.501.

**63.593 Independent Study (4 q.h.)**

Continuation of 63.592. *Prereq.* 63.592.

**63.600 Seminar in Group Dynamics (2 q.h.)**

Seminar covering all aspects of motivation, behavior patterns, and the general process procedures. *Prereq.* 63.551.

## **86 & 87—HEALTH PROFESSIONS**

*Courses open to all Health Profession Students.*

**86.502 Hospital Law and Ethics (2 q.h.)**

A study of important legal principles and rulings of importance to medical administrative personnel and others. Brief introduction to interpersonal ethics in patient care.

**86.504 Foundations of Medical Science I (2 q.h.)**

Study, primarily through physicians' lectures, of major disease problems in our society and modes of treatment. Intended for the non-medical student who wishes an understanding of the problems faced by the physician in daily practice, to facilitate communication between medical and non-medical members of the health team. Discusses organized care, diagnosis, and treatment.

**86.505 Foundations of Medical Science II (2 q.h.)**

A continuation of 86.504, emphasizing reproduction, birth, pediatrics. Dental health and dermatology also discussed.

**86.506 Foundations of Medical Science III (2 q.h.)**

A continuation of 86.505. Heart disease; cancer; stroke; blood and lymphatic diseases; accidents; musculo-skeletal, respiratory, and gastro-intestinal diseases.

**86.507 Medical Terminology I (2 q.h.)**

An intensive introduction to medical terminology including stems, prefixes, and suffixes. Practice in usage.

**86.508 Medical Terminology II (2 q.h.)**

A more extensive and in-depth consideration of medical terminology. Intended for the medical records specialist. *Prereq.* 86.507.

**86.509 Medical Terminology (4 q.h.)**

Combines the content of 86.507 and 86.508.

**86.511 Personal and Community Health (2 q.h.)**

Principles of personal health and healthful living and their application to interpersonal relationships and community life. Discusses important contemporary health problems.

**86.512 Foundations of Medical Science (3 q.h.)**

Combines the content of 86.504 and the first half of 86.505. Offered for day programs only.

**86.513 Foundations of Medical Science (3 q.h.)**

Combines the content of the second half of 86.505 and 86.506. Offered for day programs only.

**86.515 Home Health Care (3 q.h.)**

A combination lecture and field training program designed to provide the technical skills required for the provision of effective community home health care. *Prereq.* *Permission from the Dean.*

**86.516 Principles and Practice of Community Mental Health (3 q.h.)**

The course will provide a rudimentary understanding of the basic principles and techniques of modern community mental health practice. Supervised clinical experience will be provided.

**86.521 Public Health I (2 q.h.)**

Principles of public health. Organization of health agencies and services.

**86.522 Public Health II (2 q.h.)**

Continuation of 86.521, emphasizing community organization for health services. *Prereq.* 86.521.

**86.524 Methods and Materials in Public Health Education (2 q.h.)**

An introduction to health education in the public health context. *Prereq.* 86.511 or 86.522.

**86.531 Man's Present Environment (2 q.h.)**

A survey of environmental conditions in land, air, and water. The causes of pollution; effects on man and other life; and a general discussion of current control methods. Particular emphasis on the significance of environmental problems to the individual.

**86.532 Environmental Problems and Control (2 q.h.)**

Aspects of environmental engineering on a municipal scale are presented in a format directed to the nonprofessional. Discussion of topics in water supply and water quality, waste water treatment and disposal, solid waste management, milk and food sanitation, and noise control, in the language of the interested citizen.

**86.533 Pollution and the Global Environment (2 q.h.)**

Threats to the environment on a global scale from man's activities, and an examination of various methods and recommendations for control of atmospheric, oceanic, and land pollution.

**86.541 Medical Care and Current Social Problems I (2 q.h.)**

Seminar course discussing society's organization to deliver medical care services.

**86.542 Medical Care and Current Social Problems II (2 q.h.)**

A continuation of 86.541 discussing topics identified in the first part of the course as matters of great concern in the field of medical care. *Prereq.* 86.541.

**86.543 Medical Care and Current Social Problems III (2 q.h.)**

A continuation of 86.542, examining current professional literature of medical care. *Prereq.* 86.542.

**86.545, 86.546 Contemporary and Controversial Issues in Family Health I, II (4 q.h.)**

A survey of contemporary health topics will be offered. Timely issues will be analyzed to differentiate fact and opinion. The course is designed for non-medical individuals desiring authentic information on current health matters. General and mental health topics will be covered.

**86.548 The Health of the Young Child (2 q.h.)**

A course for people working in health programs that reach out to families through clinics, schools, etc. Emphasis on early child development, on relating to the child in his immediate environment, and on expanding observation skills to increase early identification of children with special needs.

**86.500 Orientation and Counseling for Family Health Workers (non credit)**

Discussion of the role of family health workers in the community; their relationship to health centers and to other members of the medical team. Discussion of professional standards and future career possibilities.

**86.571 Long-Term Care Administration I (2 q.h.)**

The organization of care for the long-term acute and chronically ill patient. Goals and purposes of nursing homes; types. Budgeting, financing, administration, and services.

**86.572 Long-Term Care Administration II (2 q.h.)**

Nursing units; role of the physician. Nursing home-hospital relationships. Therapies. Social Work. *Prereq.* 86.571.

**86.573 Long-Term Care Administration III (2 q.h.)**

Design of long-term care facilities, capital funding, staffing, budgeting, public relations. *Prereq.* 86.572.

**86.539 Health, Disease, and Disability I (Formerly 86.574) (2 q.h.)**

A study of the major disease or disability states and their impact on human physiology and psychology. Social and individual response to these states. Lectures, demonstrations, field visits. Part I emphasizes medical areas. *Prereq.* 86.506 or 86.513, and 18.306, 18.309, or 18.326.

**86.540 Health, Disease, and Disability II (Formerly 86.575) (2 q.h.)**

A continuation of 86.574. Part II emphasizes surgical areas. *Prereq.* 86.574.

**86.577 Long-Term Care Administration IV (2 q.h.)**

The nature and problems of aging—individual and social considerations. *Prereq.* 86.573.

**86.578 Long-Term Care Administration V (2 q.h.)**

The care of elderly patients in home, community, and institutions. *Prereq.* 86.577.

**86.579 Long-Term Care Administration VI**

Seminar course on the provision and improvement of services to the elderly. *Prereq.* 86.578.

**86.581 Hospital Organization and Management I (2 q.h.)**

The history and development of hospitals—the contemporary hospital system. Different types of hospital organizations. For middle-management personnel.

**86.582 Hospital Organization and Management II (2 q.h.)**

A continuation of 86.581; hospital departments, their organization, functions, and interrelationships. For middle-management personnel. *Prereq.* 86.581.

**86.583 Hospital Organization and Management III (2 q.h.)**

A continuation of 86.582. New methods of patient care. For middle-management personnel. *Prereq.* 86.582.

**86.601 Communications for Health Care Personnel I (2 q.h.)**

A two-part course blending the demands of careful interviewing techniques, thorough record keeping, and accurate and articulate health correspondence. Emphasis will be placed on effective interaction between patients and health personnel, and between health workers and staff members of health agencies. This course will also deal with the means of effecting good communicative skills with community resources for the benefit of patients.

**86.602 Communications for Health Care Personnel II (2 q.h.)**

Continuation of 86.601.

**86.603 Seminar: Criteria and Correlation of Therapeutic and Rehabilitative Services (2 q.h.)**

Exposure to and interpretation of the proper use of the therapies in home health care. Discussion of those employed in aiding the emotionally and mentally disturbed individual. The role of the health care worker in families where such services are required. *Prereq. Permission of Instructor.*

**86.604 Seminar: Relevant Topics in Health Care for Family Health Workers (2 q.h.)**

Discussion of the rights of patients and families in relationship to health problems; how to implement community resources in a meaningful manner; and consideration of current topics that become relevant to health care of the family. *Prereq. Enrollment in Program for Family Health Workers.*

*The following courses are offered by Business Administration and are available to students in the health science and other health profession programs*

**45.697 Information Processing in Medicine I**

A non-technical survey of the impact and potential of computers in medicine; medical records; clinical reporting systems; automated laboratories; on-line monitoring; research needs; medical administration requirements. *Prereq. none. (Offered Fall Quarter)*

**45.698 Information Processing in Medicine II**

Analysis of the content and interactions of medical information subsystems. Implications of computerization of various medical activities; equipment selection; organizational considerations. *Prereq. 45.697.*

*Courses open to medical record students only*

**86.544 Medical Records Field Practice and Research Seminar (3 q.h.)**

Full-time field assignment in affiliated hospital medical record departments with research assignments and regularly scheduled seminar and conference sessions. *Prereq. 85.558 and permission of instructor.*

**85.551 Organization of the Medical Record Department I (2 q.h.)**

The study of the hospital, patterns of organization, lines of responsibility and authority, medical staff and administrative organization, departmental functions and organization. The planning aspects of management are stressed. *Prereq. 86.556.*

**86.552 Organization of the Medical Record Department II (2 q.h.)**

The study of fundamental principles and successful practices in getting office work accomplished. Office management problems and their solution, conceptive framework for the operation of essential management function, facilities, solutions, and contributions to the office.

**86.553 Organization of the Medical Record Department III (2 q.h.)**

The study of the controlling function in the Medical Record Department. Quality control, time standards, cash controlling, budgeting, and office manuals. Work simplification and systems as it applies to the Medical Record Department.

**86.554 Medical Record Science I (4 q.h.)**

Introduction to medical records; history of the medical record, and medical record forms. A study of the professional medical record administrator and his relationship to the health facility. Medical staff and committees in the hospital. Quantitative analysis of the medical record. *Prereq.* 80 q.h. of credit including 18.524, 18.525, 18.526, 86.507, and 86.508.

**86.555 Medical Record Science II (4 q.h.)**

A study of the numbering, filing, securing, and preserving of medical records. Includes the study of principles of law as related to patient care and medical records. Study and practice of medical transcription. The rules of privileged communications and the release of information to agencies stressed. *Prereq.* 86.554.

**86.556 Medical Record Science III (4 q.h.)**

A study of the basic principles of compiling statistics for hospitals and other health institutions. Includes the preparation of the daily census, discharge analysis, monthly, annual, and special reports. Birth and death certificates. *Prereq.* 86.555.

**86.557 Medical Record Science IV (4 q.h.)**

Principles of standardized nomenclature of diseases and operations. International classification of diseases, adapted—8. Study of other indexes used in Medical Record Department, directed laboratory practice for proficiency. *Prereq.* 86.556 and 86.506.

**86.558 Medical Record Science V (4 q.h.)**

A study of the new and advanced aspects of medical record science. Includes such topics as skilled nursing facilities, neighborhood health centers, utilization review, PSRO, and cancer registry. *Prereq.* 86.557.

**86.559 Current Issues in Medical Record Administration (2 q.h.)**

Seminar course discussing new problems presented by changing patterns of medical care. Review of the current literature.

**86.564 Seminar in Medical Record Science (3 q.h.)**

Class discussion of experiences in the clinical setting. Assigned outside projects. Supervised practice. (*Open only to full-time medical record majors during senior year*)

**86.585 Medical Record Computer Science (2 q.h.)**

Electronic data processing applications in the medical record environment. The study of the hospital information system. Application of computers in hospital methodology and assessing the need for EDP in medical record environment. Trends in the state of the art and future prospects for medical record management. *Prereq.* EDP I and II.

**86.586 Applied Medical Record Science I (3 q.h.)**

Clinical practice in medical record science and management techniques at one or more of the affiliated hospitals.

**86.587 Applied Medical Record Science II (3 q.h.)**

Clinical practice in medical record science and management techniques at one or more of the affiliated hospitals.

**86.588 Applied Medical Record Science III (2 q.h.)**

Clinical practice in medical record science and management techniques at one or more of the affiliated hospitals.

*Courses open to Respiratory Therapy students only*

**86.591 Introduction to Respiratory Therapy I (4 q.h.)**

The development and understanding of the respiratory therapist's role as a member of the health care profession. A concise survey of the normal structures and functions of the human body with particular emphasis on the organs of respiration and circulation and the principle of oxygen transport and tissue metabolism. An introduction to the physical principles governing gas exchange and the design of mechanical equipment. *Prereq. Permission of Director of Program.*

**86.592 Introduction to Respiratory Therapy II (4 q.h.)**

A continuation of 86.591 with emphasis on ventilation, acid-base balance, blood gases, cardiovascular physiology, and clinical cardiopulmonary pathology.

**86.593 Introduction to Respiratory Therapy III (4 q.h.)**

An expansion of 86.591 and 86.592 with emphasis on therapy modalities in current use. Topics covered include gas administration systems, humidity and nebulization, mechanical ventilation, and pulmonary function equipment. Special attention is given to the physical and microbial care necessary in applying these modalities.

**86.681 Pulmonary Technology I (2 q.h.)**

Introduction to basic concepts of pulmonary physiology. The lung volumes, vital capacity and its subdivisions, residual volume, functional residual capacity, and total lung capacity. Pulmonary ventilation and its regulation. Causes, effects, and tests for uneven distribution of inspired gas. A concise survey of important pulmonary functions and laboratory procedures in clinical spirometry. *Prereq. 86.186 or equiv.; 86.115 or equiv.; or permission of instructor.*

**86.682 Pulmonary Technology II (2 q.h.)**

Pulmonary circulation. Diffusion and factors affecting diffusing capacity. Methods of determining blood  $O_2$ ,  $CO_2$ , and pH. Oxygen-hemoglobin dissociation curves. Significance of anoxemia, anoxia, and changes in arterial  $PCO_2$ ,  $CO_2$ , pH, and acid-base balance. *Prereq. 86.681 or permission of instructor.*

**86.683 Pulmonary Technology III (2 q.h.)**

Mechanics of breathing, compliance of lungs and thorax, airway resistance, the work of breathing, expiratory flow limitation, flow volume curves, dynamic inhomogeneities, closing volumes and measurements. Evaluation of pulmonary function, obstructive and restrictive patterns. Case studies, special laboratory procedures.

*Courses open to Special Respiratory Therapy Program students only*

**86.691 Applied Clinical Study I (2 q.h.)**

A presentation of the techniques, skills, and rationale for the effective administration of gas, humidity, and aerosol therapy. Also introduces the student to quality patient care concepts necessary to develop the ability to function as a member of the health care team. *Prereq.* 86.591.

**86.692 Applied Clinical Study II (2 q.h.)**

A presentation of the techniques, skills, and rationale for the proper and effective administration of intermittent positive pressure breathing and chest physiotherapy with practical clinical application of both. An introduction to the basic concepts of microbiology and problems of immunization with stress on the clinical problems of infection and the techniques of cleaning and sterilization in the clinical setting. *Prereq.* 86.691.

**86.693 Applied Clinical Study III (2 q.h.)**

An introduction to the skills, techniques, and rationale necessary to perform proper and effective airway management, cardiopulmonary resuscitation and artificial ventilation therapy presented in the laboratory setting with emphasis on the development of manual dexterity prior to clinical application. *Prereq.* 86.692.

**86.694 Applied Clinical Study IV (6 q.h.)**

Clinical application of the techniques and skills acquired in the preceding three quarters, with emphasis on the development of an individual who will provide safe and effective respiratory care, together with a basic introduction to pharmacology, clinical medicine, and disease entities. *Prereq.* 86.693.

*Courses for Dental Hygiene students enrolled in baccalaureate degree program*

**86.535 Oral Microbiology and Infectious Disease I (2 q.h.)**

The qualitative and quantitative composition of the microbiota inhabiting the various ecologic niches of the oral cavity. Methods which have been used to study the oral microbiota will be critically evaluated. Ecologic factors such as adhesion, growth factors, and physico-chemical environment controlling the establishment of colonization of organisms in such sites will be discussed in detail. *Prereq.* Chemistry, Microbiology I.

**86.536 Oral Microbiology and Infectious Disease II (2 q.h.)**

The pathogenic potential of plaque microorganisms in terms of caries, periodontal disease, and mixed anaerobic infections will be evaluated. Mechanisms of pathogenicity in each disease state will be discussed. Attempts will be made to use the information developed in the course to project methods of control of the diseases caused by oral microorganisms. *Prereq.* 86.535.

**86.537 Advanced Periodontology I (2 q.h.)**

The structure of the periodontal tissues at both a light and electron microscopic level will be discussed. Particular attention will be paid to the vascular and cellular changes in inflammation. Consideration of the physiologic and chemical basis of the observed differences in pathological and nonpathological processes



will be examined extensively with emphasis on the dynamics of these changes.

*Prereq. Anatomy & Physiology, Chemistry, Pathology.*

**86.538 Advanced Periodontology II (2 q.h.)**

The etiologic factors responsible for the pathologic alterations discussed in Part One will be examined. Attempts will be made to correlate experimental animal findings with the human clinical situation. Methods of diagnosis, treatment planning, and treatment, as well as approaches to the evaluation of therapeutic efficacy will be discussed. Stress will be placed on relating modern concepts of etiology to alterations in approach to therapy. *Prereq. 86.537.*

*Courses open to Radiologic Technology students*

**86.614 Advanced Radiologic Technology I (2 cl., 2 q.h.)**

Review of basic principles; new equipment (operation); special procedures; thermography; ultrasound and video; anatomy and physiology. *Prereq. R. T. or special permission.*

**86.615 Advanced Radiologic Technology II (2 cl., 2 q.h.)**

The study of specialized procedures which utilize advanced and sophisticated equipment in the fields of: neurology; cardio-vascular, pediatrics, tomography, intraoral, operative procedures. *Prereq. 86.614.*

**86.616 Advanced Radiologic Technology III (2 cl., 2 q.h.)**

Accounting principles; budgeting, preparing schedules; personnel practices. *Prereq. 86.615.*

**86.617 Radioactive Isotopes and Therapy I (2 cl., 2 q.h.)**

Review of physics, mathematics, anatomy, treatment planning, radiation units of measurement, and introduction to radioisotopes *Prereq. 86.616.*

**86.618 Radioactive Isotopes and Therapy II (2 cl., 2 q.h.)**

Radiobiology, nursing procedures, protection and shielding, and supervoltage equipment. *Prereq. 86.617.*

**86.619 Radioactive Isotopes and Therapy III (2 cl., 2 q.h.)**

Specific procedures, records and administrative procedures, clinical application, and radiobiology. *Prereq. 86.618.*

**86.620 Radiologic Technology Orientation I (2 cl., 2 q.h.)**

A study of the history of X-rays; medical terminology; nursing and dental procedures pertinent to radiologic technology. *Prereq. none.*

**86.621 Radiologic Technology Orientation II (2 cl., 2 q.h.)**

A study of pediatrics and proper methods of immobilizing infants. Necessity for standardizing radiographic exposures to protect the patient. Medical and surgical diseases and the effects they cause on anatomy and physiology and the radiograph. *Prereq. 86.620.*

**86.622 Radiological Science I (4 cl., 4 q.h.)**

A survey of the basic concepts of physics; units of measurement; Newton's

law of motion work; energy; atomic theory of matter; electric currents; magnetism; generators; motors; production and control of high voltage. *Prereq. none.*

**86.623 Radiological Science II** (4 cl., 4 q.h.)

Interaction of X-rays and matter; nature and production of X-rays, radioactivity; properties of lightwaves; optics; heat transfer and wave motion; dosimetry; X-ray circuits and tubes. *Prereq. 86.622.*

**86.624 Principles of Radiology I** (4 cl., 4 q.h.)

Chemistry used to process radiographic films; uses of each chemical. A study of the planes of the body; basic positioning of the skeletal system and more detailed positions utilized to demonstrate anatomical parts to best advantage. *Prereq. none.*

**86.625 Principles of Radiology II** (4 cl., 4 q.h.)

Organization factors of hospitals; financial consideration; legal considerations; proper care and maintenance of X-ray equipment; test equipment necessary; special procedures used in radiology and indications for doing them. *Prereq. 86.624.*

**86.626 Radiologic Photography and Exposure I** (4 cl., 4 q.h.)

A study of contrast materials used to visualize areas and organs of the body; basic principles of image formation; electromagnetic spectrum; circuits used in radiology; X-Ray tube construction; factors controlling radiographic quality. *Prereq. none.*

**86.627 Radiologic Photography and Exposure II** (4 cl., 4 q.h.)

Accessory items used to improve radiographic quality; methods of protection for patients and personnel. Effects of radiation on cells and tissue, malignant and benign; therapy planning and treatment; uses of radioactive nuclides for diagnosis and treatment. *Prereq. 86.626.*

**86.647 Radiology Practicum** (formerly 86.628 & 86.629) (12 q.h.)

Application of theoretical principles presented at the University by performing radiographic procedures under supervision. Assigned homework to be part of lesson plans received while at the hospital, and lectures presented at the hospital and the University. *A.M.A. requirement minimum 2 hrs/week.*

*Courses open to students in Medical Laboratory Science programs*

**87.211 Coagulation** (1 cl., 2 lab., 2 q.h.)

Advanced studies in coagulation factory identification and problem solving of coagulation tests. Discussion of related Hematologic Disorders.

**87.213 Immunohematology** (1 cl., 2 lab., 2 q.h.)

Advanced studies in antigen-antibody detection and problem solving of immunohematological tests. Discussion of related hematologic disorders, and the medical legal aspects of blood banking.

**87.222 Histochemistry** (of hemic cells) (1 cl., 2 lab., 2 q.h.)

The histochemistry and electronmicrography of hemic cells and the use of these techniques in diagnosis of hematologic disorders.

**87.540 Seminar in Medical Technology** (formerly 18.529) (2 cl., 2 q.h.)

Current topics in medical technology. Required readings and presentations by students. Guest lecturers. *Prereq. Permission*

**87.541 Hematology** (formerly 18.341) (1 cl., 3 lab., 2 q.h.)

Basic hematological techniques including discussion of the differential smear and observation of the normal morphology of human red cells, white cells, and platelets. *Prereq. 18.512 or equiv.* (Laboratory fee) (Not for Medical Technology or Hematology majors.)

**87.542 Morphologic Hematology I** (formerly 18.342) (1 cl., 3 lab., 2 q.h.)

Morphologic and etiologic classification of the anemias. Related diagnostic tests will be discussed. *Prereq. 18.541 or equiv.* (Laboratory fee)

**87.543 Morphologic Hematology II** (formerly 18.343) (1 cl., 3 lab., 2 q.h.)

Studies of pathologic and physiologic deviations of the white cell series as observed in leukemias and infections. Some animal hematology will be included. *Prereq. 18.542 or equiv.* (Laboratory fee)

**87.544 Epidemiology I** (2 q.h.)

Basic concepts in epidemiology. Causes of disease. Factors contributed by agent, the human host, and the environment. Illustrated by case studies. *Prereq. Microbiology or permission of instructor.*

**87.545 Epidemiology II** (2 q.h.)

Acquisition and evaluation of data in epidemiology. Relationships of person, time, and place. Case studies and problems. *Prereq. 87.544 or permission of instructor.*

**87.546 Medical Laboratory Science Education Seminar** (2 q.h.)

A series of seminars designed to prepare the practicing technologist for effective clinical instruction.

**87.547 Medical Laboratory Science Administration Seminar** (2 q.h.)

A presentation of the principles of personnel and laboratory management, medical and legal aspects of medical technology, and quality control.

**87.508 Introduction to Cytotechnology** (2 cl., 2 q.h.)

A review of cell structure, principles of microscopy, and staining techniques. Anatomy and physiology of the female reproduction system and study of the non-malignant cytology of the female genital tract. *Prereq. 18.132 or equiv.* (Laboratory fee)

**\*87.518 Applied Cytology I** (At Hospital) (4 q.h.)

The microscopic evaluation and screening of benign cytological smears and smears from cervical dysplasia, carcinoma-in-situ, invasive squamous cell carcinoma and adenocarcinoma, and invasive malignant tumors of the female genital tract.

\*Available only to students enrolled in the 12-month professional cytology program.

**87.528 Cytopathology I** (2 cl., 2 q.h.)

Cytopathology and clinical aspects of cervical dysplasia, carcinoma-in-situ, and invasive squamous cell carcinoma. Consideration of endometrial and endocervical carcinoma, other genital tract cancers and radiation effect. *Prereq.* 87.508. (Laboratory fee)

**87.538 Cytopathology II** (2 cl., 2 q.h.)

Benign and malignant cytology of the respiratory and gastrointestinal systems correlated with the anatomy and physiology. Considerations of clinical aspects. Special collection techniques. Emphasis on cancer of the lung and stomach. *Prereq.* 87.528. (Laboratory fee)

**\*87.548 Applied Cytology II** (At Hospital) (4 q.h.)

The microscopic evaluation and screening of cytological smears from the respiratory tract, gastrointestinal tract, urinary tract, and from body fluids. Continuing evaluation of Cytological smears from the gynecological tract.

**87.558 Cytopathology III** (2 cl., 2 q.h.)

Study of benign, atypical and malignant cells exfoliated from various portions of the urinary tract, in serious effusions, cerebrospinal fluid, and breast secretions. *Prereq.* 87.528. (Laboratory fee)

**87.568 Cyto genetics and New Concepts** (2 cl., 2 q.h.)

Clinical and cytological aspects of genetics, including genetic counseling. Special uses of cytology. Cell research techniques, cancer. Epidemiology and current concepts related to cytotechnology. *Prereq.* 87.558 or permission of instructor. (Laboratory fee)

**\*87.578 Applied Cytology III** (At Hospital) (4 q.h.)

The microscopic evaluation and screening of cytological smears from all parts of the body. Practical experience in genetic cytology.

**87.588 Cytopathology Seminar**

Advanced course for students in baccalaureate degree program. Discussion of pertinent journal reports, new methodologies, and research. *Prereq.* *Permission of instructor.*

**87.598 Special Topics** (2 cl., 2 q.h.)

Special projects in cytology, cytopathology, or cytotechnology investigated or reviewed and reported by student. Written and oral presentation required. *Prereq.* 87.558 or permission of instructor.

**87.608 Seminar: Cytopathology — Criteria and Correlations** (4 cl., 2 q.h.)

Presentation, discussion, and interpretation of benign, suspicious, and hormonal conditions. The cytological diagnostic criteria of malignant tumors from various body sites and their histopathological correlation.

**\*87.618 Applied Cytology IV** (At Hospital) (2 q.h.)

The microscopic evaluation and screening of cytological smears from various body sites. Effects of radiation and of chemotherapy; diagnosis of suspicious and hormonal conditions; cytological observations in pregnancy; and the clinical significance of these.

\*Available only to students enrolled in the 12-month professional cytology program.

**94—LAW ENFORCEMENT****94.505 Human Rights in Corrections (2 q.h.)**

Consideration of the special practices and problems in the protection of human rights in the institutional environment; legal and practical aspects.

**94.506 Basic Statistics in Law Enforcement (2 q.h.)**

Introduction to basic statistical information procedures and operations relating to law enforcement areas; interpretation of criminal statistics; crime rates; unrecognized crime; non-reporting; recidivists' rates; individual statistics; evaluation of records; research and data on specialized services.

**94.507 Correctional Counseling (2 q.h.)**

Basic concepts and principles of counseling; individual and group therapy carried on in the correctional field and institutional services; case study and projects.

**94.508 Criminal Investigation and Case Preparation I (2 q.h.)**

General investigation techniques; collection and preservation of evidence and information; consideration of particular crimes, including arson, sexual offenses, larceny, burglary, robbery, forgery, and homicide.

**94.509 Criminal Investigation and Case Preparation II (2 q.h.)**

Conduct of raids; surveillance and undercover operations; methods of preparing a case for court; specialized scientific methods; exercises involving techniques of prosecution and cross-examination. *Prereq.* 94.508.

**94.512 Comparative Police Systems (2 q.h.)**

A study of existing police systems in other jurisdictions; examination of the organization, administration and practices in police agencies in the United States, Europe, and the United Kingdom.

**94.513 Introduction to Industrial Security (2 q.h.)**

The historical, philosophical, and legal basis of security; a survey of administrative, personnel, and physical aspects of the security field.

**94.514 Interviews and Interrogations I (formerly Police Interrogation I) (2 q.h.)**

Interviewing of victims, witnesses, informants, and complainants; demonstration, study, discussion, and practice of techniques and procedures.

**94.515 Interviews and Interrogations II (formerly Police Interrogation II) (2 q.h.)**

Techniques for legally acceptable questioning of suspects and persons in custody; laws governing interrogation practices; demonstrations, class exercises and assigned projects. *Prereq.* 94.514.

**94.516 Security Administration (2 q.h.)**

Administration, organization and operations of security and protection units; personnel selection; relationships of business and industry with governmental units.

**94.517 Advanced Correctional Practices I (2 q.h.)**

Diagnosis and treatment of the drug addict and the alcoholic offender at both

juvenile and adult levels; a study of these and related kinds of personal self-abuse as to causation and treatment. *Prereq.* 94.553.

**94.518 Advanced Correctional Practices II** (2 q.h.)

Case studies of persons confined; their past and present environment and relationships; consideration of purposeful resolves or regressions. *Prereq.* 94.517.

**94.519 Advanced Correctional Practices III** (2 q.h.)

Evaluation of correction-psychiatric facilities for the disordered offender, including the aggressive, the assaultive, and the violent subject. *Prereq.* 94.518.

**94.520 Traffic Safety and Control I** (formerly Traffic Law Enforcement I) (2 q.h.)

A study of the state of the art of highway safety; research; traffic accident investigation; prevention; rescue; automated system of vehicular traffic accident and moving violation data collection; analysis and utilization; speed control; speed zoning techniques; radar; vascar; laws, rules, and regulations.

**94.521 Traffic Safety and Control II** (formerly Traffic Law Enforcement II) (2 q.h.)

An in-depth study of traffic law enforcement, techniques of selective enforcement; traffic surveys; engineering, safety education, and evaluation of current traffic programs. *Prereq.* 94.520.

**94.523 The Law and Institutional Treatment** (2 q.h.)

The process of law from arrest of offender through release in its relation to correctional principles and practices; functions of police, defense, prosecution, and courts; legal documents related to commitment.

**94.524 Comparative Correctional Systems** (2 q.h.)

A study of correctional systems and methods in selected jurisdictions; examination of the organization, administration, and practices in United States and foreign countries.

**94.525 Law Enforcement Identification and Records I** (2 q.h.)

Records and systems and utilization; survey of forms, files, procedures, standards and uniformity; concentration of theoretical and practical applications.

**94.526 Law Enforcement Identification and Records II** (2 q.h.)

Theories and practices in personal identification principles; survey and evaluation of present and new identification techniques; historical and legal consideration of identification and record data. *Prereq.* 94.525.

**94.530 Police Public Relations** (2 q.h.)

The principles of sound public relations for the entire police operation; writing, public speaking, conferences, and all news media; consideration of police image and public opinion.

**94.531 Police Community Relations** (2 q.h.)

A survey of the role and function of police in intergroup relations; human relations and minority groups; responsibilities of police with civil rights, civil disorders, and public protection.

**94.532 Research Methods in Criminal Justice** (2 q.h.)

A research project related to some specific police or correctional interest or operation, in consultation with the faculty adviser. Course meets at discretion of the instructor. Project paper required for grade.

**94.536 The Patrol Function I** (formerly Police Patrol I) (2 q.h.)

The planning process related to the administration of the patrol function. Consideration of theoretical and operational aspects of various patrol systems; random patrol, response force, split force, team policing, probability theory, and the relationship between patrol and crime levels.

**94.537 The Patrol Function II** (formerly Police Patrol II) (2 q.h.)

A continuation of 94.536 with emphasis upon the goals and objectives of police patrol management models. Discussion and analysis of manpower, work load, response time, patrol communications, preventive strategies, and inputs and outputs of patrol systems evaluated in quantitative form. *Prereq.* 94.536.

**94.541 Introduction to Criminalistics I** (2 q.h.)

A survey of the elements of microscopy, spectroscopy, and chemistry as applied to trace evidence in criminal investigations; responsibilities of technician, investigator, and others.

**94.542 Introduction to Criminalistics II** (2 q.h.)

Toxicology and serology; procedures related to other physical evidence; laboratory demonstrations and practical exercises. *Prereq.* 94.541.

**94.544 The American Correctional System** (2 q.h.)

A critical survey of the correctional field covering probation, institutions, and parole as to historical development, program content, and current problems and needs.

**94.546 Social Deviance I** (2 q.h.)

A consideration of the social problems of social disorganization, mental disorders, drug addiction, alcoholism, suicide, and sexual behavior.

**94.547 Social Deviance II** (2 q.h.)

Continuing consideration of world's population crisis, race and ethnic relations, family disorganization, work and automation, poverty and disrepute, war and disarmament. *Prereq.* 94.546.

**94.549 Treatment of Offenders I** (2 q.h.)

The concept of treatment and corrections; history; classification; training, education and guidance; treatment methods; inmate society; health and social services.

**94.550 Treatment of Offenders II** (2 q.h.)

Therapy, psychiatric and psychological considerations, case studies, evaluation of comparable methods. *Prereq.* 94.549.

**94.551 Correctional Administration I** (2 q.h.)

Correctional processes and services, standards, personnel and principles of management; allocation of resources, training of staff.

**94.552 Correctional Administration II** (2 q.h.)

Study of regular and special programs, volunteers, outside contacts, sentence reduction, discharge planning, work release administration.

**94.553 Correctional Administration III** (2 q.h.)

Types of institutions; compacts; regional concepts; planning, organizing, controlling, and directing corrections; budgeting. *Prereq.* 94.552.

**94.557 Investigative Report Writing (2 q.h.)**

Report content and writing, exercises in accurate terminology and concise reporting, interpretation and evaluation of information, practical report-writing projects.

**94.560 Police Supervision (2 q.h.)**

The police supervisor's role in discipline; interdepartmental relations; problem handling and personnel policies; problems in supervisory relationships; wages, grievances, morale, and safety.

**94.561 Police Work with Juveniles (formerly Police Juvenile Methods) (2 q.h.)**

The role of the police in delinquency prevention with emphasis on theory, administration, control, treatment, confinement, community resources, and relationships with the public and the juvenile court.

**94.563 Criminology I (2 q.h.)**

An introduction to the study of crime from the perspective of classical and contemporary criminological theories. In particular, attention is given to biological, psychological and sociological approaches to the explanation of crime.

**94.564 Criminology II (2 q.h.)**

A continuation of Criminology I with emphasis on the causes of crime and the relationship between law and crime. Specific implications of prevention, rehabilitation and treatment are considered in depth. *Prereq.* 94.563.

**94.565 Delinquency Prevention (2 q.h.)**

A survey of delinquent behavior, causation, and delinquency prevention programs; seminar projects for discussion of specific problems and general principles in establishing delinquency prevention services.

**94.567 Probation and Parole Practices I (2 q.h.)**

The probation officer; presentence investigation; conditions of probation; effectiveness, administrative aspects and prediction methods; relationship to community.

**94.568 Probation and Parole Practices II (2 q.h.)**

The parole officer; conditions of parole; supervision; effectiveness; administrative relationships; relationships to community, court and law enforcement agencies; relationships of probationer and parolee to rehabilitative, social, and family services; consideration of recidivism and aftercare.

**94.571 Law Enforcement Management and Planning I (2 q.h.)**

Philosophy and theories of management in law enforcement; studies of organization from the administrator's viewpoint, including control, efficiency, effectiveness, and discipline.

**94.572 Law Enforcement Management and Planning II (2 q.h.)**

A survey of the administrator's role, including special activities and responsibilities; administrative planning civilian personnel, including recruitment, selection, evaluation; training; budgets; management records; interpersonal communications; auxiliary services; evaluation of present and future management systems. *Prereq.* 94.571.

**94.574 Juvenile Corrections I (2 q.h.)**

A study of police, detention, petition, and hearings related to juveniles; juvenile court procedures, philosophy, and terminology; adjudication.



**94.575 Juvenile Corrections II (2 q.h.)**

Social workers, probation officers, judges, psychologists, and psychiatrists with relation to juveniles; institutions; aftercare; prevention. *Prereq.* 94.574.

**94.577 Government Security Programs I (2 q.h.)**

Department of Defense security programs; applicable federal statutes and executive orders; visitor control.

**94.578 Government Security Programs II (2 q.h.)**

Security clearances under appropriate federal directives; handling classified information; automatic time-phased downgrading and declassification.

**94.579 Government Security Programs III (2 q.h.)**

Relations with subcontractors, vendors, and suppliers; the protection of proprietary information; legal and practical protection of sensitive data. *Prereq.* 94.578.

**94.582 Document Control (2 q.h.)**

A detailed study of procedures for handling and control of classified and other sensitive information; a survey of control systems from manual to semi-automated systems using data processing equipment.

**94.583 Industrial Fire Prevention (2 q.h.)**

Principles and practices of fire safety, including organization and management responsibility, property conservation, safeguards for construction, fire control apparatus and functions, engineering and scientific data on fires and related perils.

**94.584 Physical Security I (formerly Plant Protection I) (2 q.h.)**

The basic foundations for security in industry, banking, transportation, utilities, and other nongoverning operations; physical requirements and standards.

**94.585 Physical Security II (formerly Plant Protection II) (2 q.h.)**

Implementation of security; study of inanimate aspects, including alarm and surveillance devices; study of animate aspects of protection. *Prereq.* 94.584.

**94.586 Retail Security (2 q.h.)**

The operation of security departments including functions of mercantile establishments; dishonest employees; shoplifters; management and public relations; receiving, shipping, and warehousing; special laws and procedures.

**94.587 Bank Security Measures (formerly Security Measures for Financial Institutions) (2 q.h.)**

An in-depth study of the principles and practices of security measures for banks and other financial institutions and the preparation of rules establishing minimum standards under current federal and state legislation.

**94.591 Seminar in Security (formerly Seminar in Industrial Security) (2 q.h.)**

An analysis of current problems in security such as growth patterns, salary structures, training and education, existing weaknesses; field trips, individual study assignments, and required oral and written reports.

**94.593 Seminar in Correctional Practices** (formerly Seminar in Correctional Program Management) (2 q.h.)

An analysis of current problems in corrections designed to meet the needs and interests of specific groups of students, practitioners, supervisors, and administrators of correctional programs.

**94.595 The National Law Enforcement Seminar** (3 q.h.)

An annual, concentrated exploration of current viewpoints, varied solutions, innovative procedures, and critical analyses in the issues facing law enforcement, correctional practices, and security, drawing on exceptionally qualified local and national figures. A research paper under the direction of a faculty adviser is required for credit.

**94.596 Hospital Security** (2 q.h.)

The function of protection in the health industry; medical security administration including study of health care providers; trends in hospital law; security from injury, fire and loss in the medical world; security methodology for safeguarding specialty areas; the security role in mass casualty management and emergency preparedness; the concept of professionalism; community liaison; and patient attitudes toward security.

**94.597 Current Security Problems** (2 q.h.)

An analysis of special problem areas such as security education and training, community relations, white-collar crime, drug abuse, theft control, shoplifting, document control, subversion and sabotage, protection of classified information, control of proprietary information and business espionage, labor problems, civil disturbances, and natural and man-made disasters.

**94.601 Law Enforcement Math I** (formerly Seminar in Law Enforcement 94.590) (2 q.h.)

A review of elementary algebra: algebraic expressions and operations, equations, word problems. Solutions to mathematical problems in connection with their practical applications in law enforcement.

**94.602 Law Enforcement Math II** (2 q.h.)

Further review: fundamental operations, measurement and computation, solutions of linear and quadratic equations. Probability, trigonometry, statistics, ratio, and proportion. *Prereq.* 94.601.

**94.603 Law Enforcement Math III** (2 q.h.)

Methods and applications of algebra: analytic geometry, equations of motion and energy, permutations, combinations. Stress is on problem solving more than theory. Application of these principles are applied to most areas of law enforcement. *Prereq.* 94.602.

**94.604 Seminar in Law Enforcement (Youth Crime Control)** (2 q.h.)

The criminality and deviance of those between the juvenile and adult age. Consideration is given to: concepts and characteristics of the youthful offender; the role of the family in youth crime; the generation gap; violence of youth hooliganism; drug addiction of youth; ordinary crimes of youth; the youth sub-

culture and culture conflict; the role of mass media and education in youth crime; the concepts of freedom and justice in the youth culture; treatment of youthful offenders; and the state of youth crime control in foreign countries.

**94.605 Seminar in Law Enforcement (Victimology) (2 q.h.)**

Criminal-victim relationships, with emphasis on victim-precipitated crimes and compensation to the victims. Consideration is given to: concept and significance of "victimology;" time, space, sex, age, and occupational factors in criminal-victim relationships; victims of murder, rape, other violent crimes, and property crimes; victim-typology; the public as victim; restitution to victims of crime; compensation to victims of crime; and the functional responsibility of the victim.

**94.606 Seminar in Law Enforcement (International Crime Control) (2 q.h.)**

Crimes touching upon more than one country, with emphasis on international criminal law principles, treason, and espionage. Concentration is given to: the concept of law in its comparative aspects; customs; treaties; international conventions; "comity;" culture conflicts; the "international personality;" the "attempt clause;" the Belgian approach; the Oxford approach; asylum, extradition; international ordinary criminals; political criminals; piracy (on sea and in the air); war criminals; genocide; international courts; League of Nations; United Nations; international criminal statistics; Interpol, the Soviet-type spy-schools; the history of American Intelligence.

**94.607 Seminar in Law Enforcement (Grantsmanship) (formerly Seminar in Law Enforcement, 94.590) (2 q.h.)**

This seminar is designed to familiarize the participants with the orderly sequence of organizational steps required in providing the institutional framework necessary for preparation and submission of applications to granting agencies. Major topics include: Omnibus Crime Control and Safe Streets Act of 1968; functions of the Law Enforcement Assistance Administration; grant application strategy, planning, and research.

**94.608 Seminar in Law Enforcement (Law Enforcement Operational Intelligence) (formerly Seminar in Law Enforcement, 94.590) (2 q.h.)**

Designed to provide a theoretical understanding of the value and function of an intelligence unit, including planning, directing, organizing, financing, and other salient features of the administration of these units. Emphasis is placed on organized crime, subversive activities, and liaison programs as they apply to a modern police agency.

**94.609 Independent Studies (2 q.h.)**

Faculty guided research in individually selected topics relating to the criminal justice system.

**94.610 Seminar in Law Enforcement (Collective Bargaining) (formerly Seminar in Law Enforcement, 94.590) (2 q.h.)**

The history and background of collective bargaining in the public sector as it affects members of the law enforcement field; initial establishment of rights of labor, labor legislation—federal and state; preparation for negotiation, resolutions of impasses, final agreement and operation of the contract.

**94.611 Man, Law, and Society I (2 q.h.)**

Designed to help the student to improve his capacity to handle problems in the many institutions and sociological processes of the American legal system, and to see these problems in the perspective of their everyday working interrelationships, in order to heighten his awareness of those aspects of familiar and often unnoticed legal problems which call for a perceptive understanding of the functions of the various institutions involved.

**94.612 Man, Law, and Society II (2 q.h.)**

A general analysis of the way in which major changes occur in the established practices of legal and social organizations and communities. Particularly concerned with the part played by legal institutions in initiating, controlling, and directing or assisting such changes.

**64.613 Man, Law, and Society III (2 q.h.)**

An introduction to the social science concepts and methods in their current and potential application to social and legal problems. Aims to acquaint the student with a variety of social research concepts and methods of special utility in investigating diverse types of social law related problems.

**94.614 Seminar in Law Enforcement (Interviewing Practicum) (formerly Seminar in Law Enforcement, 94.590) (2 q.h.)**

Advanced interrogation methods and procedures; techniques of persuasion; conditioning (negative and positive); the polygraph, its history and methodology; the established rules and procedures required for current diagnosis of truth and deception; the evaluation of the contemporary methods of international law enforcement agencies. *Prereq.* 94.515.

**94.615 Seminar in Law Enforcement (Organized Crime) (formerly Seminar in Law Enforcement, 94.590) (2 q.h.)**

The nature and problems of organized crime; causes and effects; comparative and historic roots; the activities, organization, and economics; possible solutions—the scope and techniques in combating organized crime.

**94.616 Seminar in Law Enforcement (Minorities and the Urban Crisis) (formerly Seminar in Law Enforcement, 94.590) (2 q.h.)**

An investigation of the ethnic and racial origins and characteristics of the American people; the interaction, conflicts, and possibilities of adjustment between the dominant society and minority groups—particularly in contemporary urban settings, and the role and function of police in their interrelationship with minority groups.

**94.617 Seminar in Law Enforcement (Criminal Behavior) (formerly Seminar in Law Enforcement, 94.590) (2 q.h.)**

An examination of crime and criminal behavior as a social phenomenon. Three principal divisions: sociology of law and its effect; criminal etiology and the scientific analysis of the causes of crime; evaluation of the various rationales of detention as a crime control factor.

**94.618 Seminar in Law Enforcement (Prosecutive Development)** (formerly Seminar in Law Enforcement, 94.590) (*Prereq.* 94.622, 94.630, 94.632, or 94.634) (2 q.h.)

Lecture and discussion relating the professional requirements of the modern police officer in the United States; oral testimony; the entire corpus delicti and all other related matters in proper form and sequence; the trial; testimony and the jury; conduct on the witness stand; opposition counsel; the defense of entrapment; opinion testimony; confessions; prospective witnesses; legal standards and the police. *Prereq.* 94.622, 94.630, 94.632 or 94.634.

**94.619 Seminar in Law Enforcement (Forensic Laboratory)** (formerly Seminar in Law Enforcement, 94.590) (2 q.h.)

Crime laboratory organization and the utilization of special equipment for the analysis interpretation, classification, and identification of physical evidence obtained in crime scene searches. The transportation, storage, and security of physical evidence and the effect of the results, coupled with the preparation of exhibits for courtroom presentation. *Prereq.* 94.542. (Laboratory fee)

**94.620 Seminar in Law Enforcement (Intervention Strategies and Tactics for Law Enforcement — Counseling Techniques)** (formerly Seminar in Law Enforcement, 94.590) (2 q.h.)

Basic concepts and principles of intervention as a social work method. Nature of therapeutic relationships, principles of communication. Diagnostic assessment of the person-problem-situation configuration. Goal-setting process. Ego supportive procedures and use of community resources.

**94.621 Civil Liberties and the Police I** (formerly Seminar in Law Enforcement, 94.590) (2 q.h.)

An in-depth preparation for the officer facing the practical problems of enforcing the law without breaching the civil rights of the accused and bystanders; individual readings, lectures, group discussions, and preparations from Massachusetts and national interest cases; many incidents pertinent to the actions of the people involved with these problems will be investigated and studied; constitutional interpretation and limitations are the guidelines for the course.

**94.622 Civil Liberties and the Police II** (2 q.h.)

Several Supreme Court cases are followed from the time of the call, to the confrontation, arrest, examination in court, appeals, and the direct statements on the problem by jurists of the highest courts. The last section of the term ties in the latest criminal law and civil rights act changes including—but not limited to—criminal justice and no-knock laws and the latest Civil Rights Act provisions. *Prereq.* 94.621.

**94.623 Seminar in Law Enforcement (Drugs)** (formerly Seminar in Law Enforcement, 94.590) (2 q.h.)

Designed to meet the needs of law enforcement personnel in the problematic area of drug abuse; the law, society classification, distribution, identification, and the effects of drugs.

**94.624 Seminar in Law Enforcement (Executive Development)** (formerly Seminar in Law Enforcement, 94.590) (2 q.h.)

The role of the police administrator within the managerial structure. Special

problems unique to the law enforcement executive, decision making, policy formation, planning, controlling, communicating, and directing. A consideration of case studies and surveys will be utilized.

**94.625 Seminar in Law Enforcement (Mental Health and the Police)** (formerly Seminar in Law Enforcement, 94.590) (2 q.h.)

A study of the roles of law enforcement and mental health services. Diagnosis of the triggering mechanisms of behavioral disorders and the suicidal phenomenon; psychiatric and psychological considerations; case studies and the legal process.

**94.626 Seminar in Law Enforcement (Data Processing)** (formerly Seminar in Law Enforcement, 94.590)

An introduction to automated systems utilized in the field of law enforcement; basic program concepts; filing and sorting techniques; available input and output storage media; types and sources of data communications and applications.

**94.627 Administration of Justice I** (formerly 94.501) (2 q.h.)

A survey of the evaluation of justice from the earliest times, developed historically, with particular emphasis on Western justice and American justice, including the roles played by the judiciary, with stress on due process and the constitutional guarantees.

**94.628 Administration of Justice II** (2 q.h.)

An analysis of the various groups and professions in the American justice system. Emphasis is fixed on human relations, efficiency, current trends, and the future role of the American criminal justice system. *Prereq.* 94.627.

**94.629 Civil Law in Criminal Justice I** (formerly 94.511) (2 q.h.)

Civil matters such as defamation, negligence, assault and battery, false confinement, trespass, conversion, and agency relationships.

**94.630 Civil Law in Criminal Justice II** (2 q.h.)

Civil matters such as the law of contracts, bailments, domestic relations and business relationships which should be known to and distinguished by law enforcement personnel. *Prereq.* 94.629.

**94.631 Criminal Law I** (2 q.h.)

Exploration of the major problems of criminal law as a device for controlling socially undesirable behavior. It is intended to give one a working knowledge of the basic questions of public policy involved in the administration of criminal justice and the legal principles of determining criminal liability. Course includes a consideration of specific crimes, elements of a crime, parties to a crime, and defenses to a crime.

**94.632 Criminal Law II** (2 q.h.)

Consideration of vital constitutional and statutory concepts, including self-incrimination, search and seizure, law of arrest, criminal procedure and responsibility, confessions, right to counsel, and conduct of trial in the District, Superior, Appellate, and Federal Courts. *Prereq.* 94.631.

**94.633 Evidence and Court Procedure I** (2 q.h.)

Rules of evidence; principles of exclusion; evaluation and examination of evidence and proof.

**94.634 Evidence and Court Procedure II (2 q.h.)**

Competency, consideration of witnesses, laws of search and seizure, court procedures, moot court exercises. *Prereq.* 94.633.

**94.650 Fire Investigation and Arson I (2 q.h.)**

A study of the elementary chemistry of combustion involving sources of ignition, fuels, the nature and behavior of gases and their toxicity. The combustion properties of non-solid fuels as opposed to the combustion properties of solid fuels are considered. Also consideration is given to explosions associated with fires. A discussion of the socio-economic aspects of fire including the pyromaniac and his physiological involvement.

**94.651 Fire Investigation and Arson II (2 q.h.)**

A more concentrated approach is taken in dealing with the fire bug and his sociological orientation. A discussion of carbon, hydrogen, and oxygen as major elements in all fires and the flameless ignition effect. Methods of fire-proofing are also considered and references made to various types of building materials as well as the role of pyrolysis. Fire patterns of structural fires and asphyxiation along with the legal aspects of arson are also considered. *Prereq.* 94.650.

**94.652 Law Enforcement Fiscal Management**

The various budgeting systems and their application to law enforcement organizations including: the line item budget, programmed budget, performance budget, and the planned programmed budget system; development of sound fiscal policy; appropriation of funds; tax base revenue systems; distribution of public monies; budget request, expenditures, and auditing procedures.

**94.653 Massachusetts Criminal Law**

A comprehensive study of Massachusetts Criminal Law and its application by law enforcement officers. Areas of study include: Common Law, Criminal Statutes, Annotated Laws, Criminal Case Law, Supreme Court Decisions, and Motor Vehicle Law.

**94.658 Alcohol Problems in Law Enforcement**

Acquaints students with the current state of knowledge on society, culture, and drinking patterns; the variety of alcohol problems that confront peace officers; discussion of the range of solutions available.

**94.697 Honors Program I (4 q.h.)**

*Prereq.* Approval of the Dean.

**94.698 Honors Program II (4 q.h.)**

*Prereq.* 94.697.

**94.699 Honors Program III (4 q.h.)**

*Prereq.* 94.698.

## INTENSIVE COURSES

The following are intensive courses. Please refer to the combination numbers for the individual course description previously listed in this catalog.

**97.500 Administration of Justice (Intensive) (4 q.h.)**

Combination of 94.627 and 94.628.

**97.501 Criminal Law (Intensive) (4 q.h.)**

Combination of 94.631 and 94.632.

**97.502 Evidence and Court Procedure (Intensive) (4 q.h.)**

Combination of 94.633 and 94.634.

**97.503 Civil Law in Criminal Justice (Intensive) (4 q.h.)**

Combination of 94.629 and 94.630.

**97.504 Civil Liberties and the Police (Intensive) (4 q.h.)**

Combination of 94.621 and 94.622.

**97.505 Interviews and Interrogations (Intensive) (4 q.h.)**

Combination of 94.514 and 94.515.

**97.506 Traffic Law Enforcement (Intensive) (4 q.h.)**

Combination of 94.520 and 94.521.

**97.507 Law Enforcement Identification and Records (Intensive) (4 q.h.)**

Combination of 94.525 and 94.526.

**97.508 Introduction to Criminalistics (Intensive) (4 q.h.)**

Combination of 94.541 and 94.542.

**97.509 Social Deviance (Intensive) (4 q.h.)**

Combination of 94.546 and 94.547.

**97.510 Law Enforcement Management Planning (Intensive) (4 q.h.)**

Combination of 94.571 and 94.572.

**97.511 The Patrol Function (Intensive) (4 q.h.)**

Combination of 94.536 and 94.537.

**97.512 Criminal Investigation and Case Preparation (Intensive) (4 q.h.)**

Combination of 94.508 and 94.509.

**97.513 Criminology (Intensive) (4 q.h.)**

Combination of 94.563 and 94.564.

**97.514 Treatment of Offenders (Intensive) (4 q.h.)**

Combination of 94.549 and 94.550.

**97.515 Probation and Parole Practices (Intensive) (4 q.h.)**

Combination of 94.567 and 94.568.

**97.516 Fire Investigation and Arson (Intensive) (4 q.h.)**

Combination of 94.650 and 94.651.

**97.517 Advanced Correctional Practices (Intensive) (6 q.h.)**

Combination of 94.517, 94.518, 94.519.



**97.518 Correctional Administration (Intensive) (6 q.h.)**

Combination of 94.551, 94.552, 94.553.

**97.519 Law Enforcement Mathematics (Intensive) (6 q.h.)**

Combination of 94.601, 94.602, 94.603.

**97.520 Government Security Programs (Intensive) (6 q.h.)**

Combination of 94.577, 94.578, 94.579.

**97.521 Man, Law, and Society (Intensive) (6 q.h.)**

Combination of 94.611, 94.612, 94.613.

# university college faculty

- Francis Abbate, B.S.  
*Law Enforcement*  
Westwood Police Dept.
- Herbert Abrams, J.D., M.L.  
*Criminal Law Evidence & Procedure*  
Herbert Abrams, Counsellor at Law
- Roger L. Ackels, B.S., M.B.A.  
*Marketing*  
General Motors
- Henry Adleman, B.S.  
*Management Information Systems*  
Digital Equipment Corp.
- Kenneth Aft, B.S.E.E., M.B.A.  
*Industrial Management*  
Foxboro Company
- \*John P. Agnew, A.B., M.A., Ph.D.  
*Political Science & History*  
Pine Manor Junior College
- Thomas J. Ahern, Jr., B.A., J.D.  
*Law*  
Silver & Ahern
- H. David Ahlberg, A.B., Ph.D.  
*Biology*  
Northeastern University
- Joseph Aieta, III., B.S., M.A., M.A.  
*History*  
Lasell Junior College
- John J. Aldrich, B.A., M.Ed.  
*Earth Science*  
Wellesley Junior High School
- Israel Aluf, B.A., M.A., Ph.D.  
*German*  
Northeastern University
- Lois W. S. Ames, B.A., M.A.  
*Criminal Justice*  
Northeastern University
- Esmail E. Amiri, B.S., M.A.  
*Economics, Government Finance*  
Northeastern University
- Robert Anastas, B.A., M.A.  
*Law Enforcement*  
Wayland Public Schools
- Beverly J. Anderson, A.B., M.A.  
*Sociology*
- Dora L. Anderson, B.A., Ed.M.  
*Personnel & Industrial Relations*  
Consultant in Mgmt. & Org. Development
- Harley H. Anderson, B.S., M.B.A., J.D.  
*Law*  
Northeastern University
- Harry L. Anderson, A.B., M.A.  
*English*  
Mansfield High School
- Paul G. Anderson, B.S.  
*Fine Arts*
- \*Robert E. Anderson, B.S.  
*Management Information Systems*  
Coordinator  
Anderson Associates
- R. Wayne Anderson, B.A., M.A., Ph.D.  
*History*  
Northeastern University
- Ruth T. Anderson, B.A., M.A., Ph.D.  
*History*
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*Economics*  
Bridgewater State College
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*Accounting*  
Price Waterhouse & Company
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*Sociology*  
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Northeastern University
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*Marketing*  
York Division  
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*Chemistry*  
Research Chemist, Ionics Inc.  
Master, Boston Latin School
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*English*  
Lynn Daily Evening Item
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*Psychology*  
V.A. Hospital
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*Earth Science*

\*Designates Senior Lecturer as of September, 1974.

- Joseph J. Baggetta, B.A., M.A.  
*Law Enforcement*  
Archdiocese of Boston
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*History*  
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*Sociology*  
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Ph.D.  
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*Law Enforcement*  
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Northeastern University
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M.Ed., Ed.D.  
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Mass. Dept. of Public Welfare
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J.D.  
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*Earth Science*  
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*Management*  
Arlington Public Schools
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*Marketing*  
Norwood School Department
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*Quality Control*  
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*Sociology*
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*Health Science*  
Mass. Hospital Association
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*Accounting*  
Northeastern University
- Sarah A. Carter, B.S., M.D.  
*Medical Science*  
Bedford V.A. Hospital

- Norman Cartmill, B.B.A., M.B.A.  
*Accounting, Management*  
Revere Copper & Brass, Inc.
- Grimaldo Carvalho, B.S., M.D.  
*Health Science*  
New England Medical Center  
Hospital
- Jean Carvalho, C.T. (ASCP)  
*Cytotechnology—Clinical  
Coordinator*  
Northeastern University
- Lydia Casavant, B.A., M.S.S.W.  
*Group Dynamics*  
Executive Director—Youth  
Agency—Girl Scouts
- Peter S. Casey, B.S.B.A., J.D.  
*Law Enforcement*
- Richard J. Cass, J.D.  
*Law Enforcement Security  
Consultant*  
Attorney at Law
- Christopher J. Cassidy, B.S.I.E., M.S.  
*Management Information Systems*  
Keefe Technical School
- Claire M. Cassin, C.T. (ASCP)  
*Clinical Cytology*  
N.E. Medical Center Hospital
- Stephanie L. Catalan, A.B., M.A.T., M.A.  
*Sociology*  
Boston College
- John O. Cech, B.A., Ph.D.  
*English*
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*Psychology*  
Boston V.A. Hospital
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*Psychology*  
Medfield Foundation
- George F. Chen, B.A., M.A., M.S.  
*Economics*  
Northeastern University
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*Philosophy*  
New England Life
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*Corrections*  
Mass. Dept. of Correction
- John Chrunev, B.S.  
*Management*  
Dunkin Donuts, Inc.
- Donald J. Ciappenelli, Ph.D.  
*Chemistry*  
Brandeis University
- Robert E. Cipriano, B.A., M.A.  
*Therapeutic Recreation*  
Northeastern University
- David E. Clapp, B.A., M.Ed.  
*Biology*
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*Earth Science*  
Wellesley Junior High School
- George P. Clinch, B.S.B.A.  
*Electronic Data Processing*  
American Mutual Insurance Co.
- \*William M. Cloran, B.S.B.A., J.D.  
*Law Enforcement*  
Clerk, Supreme Judicial Court
- Charles T. Cobb, A.S., B.S.  
*Law Enforcement*  
Boston Police Department
- Nelson N. Cochrane, A.B.  
*Corrections*  
Mass. Dept. of Correction
- William C. Coe, B.S., Ph.D.  
*Psychology*
- \*William C. Coggan, B.S., M.S., Ph.D.  
*Law Enforcement—Business*  
Massasoit Community College
- Edward S. Cohen, B.S., M.A.  
*Computer Programming*  
Engineering Computer Systems
- Ruth A. Cohen, B.A., M.S.  
*Genetics*  
Northeastern University
- Beverly Colalucci, B.A., M.Ed.  
*Educational Media*  
Boston University
- Patricia A. Cole, B.A., Th.M., Ph.D.  
*Philosophy*
- Annalee Collins, B.S.  
*Health Science*  
Nursing Home Consultant
- Charles Comegys, B.S., M.B.A.  
*Marketing Research &  
Consumer Behavior*
- Richard J. Comings, A.B., M.A.  
*History*  
Northeastern University
- Elizabeth M. Congdon, B.A., M.Ed., M.A.  
*History*  
Peabody High School
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*Systems*
- Donald B. Connors, A.B., M.B.A., M.A.T.  
*Accounting—English*  
Bunker Hill Community College
- Joseph N. Connors, A.S., B.S., M.P.A.  
*Law Enforcement*  
Northeastern University
- (Rev.) Thomas D. Conway, B.A., M.A.,  
M.R.E., M.Div.  
*Law Enforcement*  
St. John the Baptist Parish,  
Haverhill
- Constance E. Cook, B.A., M.A.  
*Political Science*
- \*Louis Cooperstein, A.B., A.M.  
*English, Modern Languages  
Consultant*  
Northeastern University
- \*Robert M. Copeland, B.S., A.M., Ph.D.  
*Modern Languages, English*  
Winchester High School
- Richard S. Corrente, B.S., M.B.A.  
*Management & Organization*  
Raytheon Company
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*Law Enforcement*
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*Psychology*  
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*Horticulture*  
Northeastern University
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*Electronic Data Processing*  
Liberty Mutual Insurance Co.
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*Consultant in Health Science*  
Northeastern University
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*History*  
Boston College

- James M. Cox, B.S.  
*Law Enforcement*  
Boston Police Department
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*English*
- Kenneth Cram, M.Ed.  
*Law Enforcement*  
Kingstown Police Dept.
- Adam D. Crescenzi, B.S.  
*Industrial Management*  
Raytheon
- Salvatore A. Crisafulli, B.S., M.B.A.  
*Electronic Data Processing*  
Digital Equipment Corp.
- Francis D. Crisley  
*Biology—Consultant*  
Northeastern University
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*Health Science*  
Children's Hospital
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*Economics*  
Salem State College
- \*John F. Cronin, Jr., A.B., M.B.A., C.P.A.  
*Accounting*  
Raytheon Co.
- Joseph W. Cronin, B.S.I.E.  
*Quality Control*  
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L.L.M.  
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Hugh J. Crossland Attorneys &  
Counsellors at Law
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*Accounting*  
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*Finance*  
Sun Life of Canada
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*Law Enforcement*  
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*Law Enforcement*  
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Cambridge Hospital Bacteriology Dept.
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*English*
- Miriam F. D'Amato, B.A., M.A.  
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Arnold E. Daum Co.
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*History*
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*Law Enforcement*  
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*Earth Science*  
Headmaster, Boston Public Schools
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*Sociology, Anthropology*



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*Political Science Major Advisor*  
Northeastern University
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*Anthropology*  
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*Branch Campus Representative*  
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Boston V.A. Hospital
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Dept. of Public Safety
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*Psychology*  
Harvard Medical School
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*Branch Campus Representative*  
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*Project Planning*  
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*Law Enforcement*  
Attorney at Law
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*Credit Management*  
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Northeastern University
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Northeastern University
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Northeastern University
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Mansfield Public School
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*Psychology*  
Boston State Hospital
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*Law Enforcement*  
Dept. of Attorney General—Criminal Division
- Arthur L. Isberg, B.S., J.D.  
*Law Enforcement*  
Commonwealth of Mass.
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*Organic Chemistry*  
Sidney Farber Cancer Center
- Herbert H. Itzkowitz, B.S.B.A., M.B.A., C.P.A.  
*Accounting*  
Rosenthal, Forman, & Itzkowitz
- Byrum M. Jackson, B.S., M.S., Ph.D.  
*Epidemiology*  
Northeastern University
- \*Phillip S. Jackson, S.B., LL.B.  
*Law*  
Attorney at Law
- Joshua R. Jacobson, B.A., M.M.  
*Music*  
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*Sociology-Anthropology*  
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CAGS, LL.B., LL.M.  
*Law Enforcement*  
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*Electronic Data Processing*  
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Northeastern University

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*Therapeutic Recreation*
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*Electronic Data Processing—Coordinator*

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Northern Middlesex
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Northeastern University
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*Law Enforcement*  
Quincy Police Dept.
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*Police Patrol, Police Super.*  
Northeastern University
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*Effective Speaking*  
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*Accounting*  
Price Waterhouse & Co.
- William T. O'Brien, A.S., B.S.  
*Law Enforcement*  
City of Boston Police Dept.
- John J. O'Callaghan, A.B., J.D., LL.M.  
*Law Enforcement*  
Suffolk University
- Daniel F. O'Connor, B.S.  
*Computer Programming*  
Northeastern University
- \*Edward T. O'Donnell, B.C.S., M.B.A.  
*Statistics*  
U.S. Bureau of Labor Statistics
- Aileen J. Ofer, B.A., M.A., M.A.  
*English*
- \*Harry Olins, A.B., J.D.  
*Law—Consultant*  
Attorney at Law
- Ernest Oliveira, Jr., B.S.B.A., M.B.A.  
*Management*  
General Electric
- George C. Olson, B.S., B.A., M.B.A.  
*Electronic Data Processing*  
Home Savings Bank



- \*David S. Omar, B.S., M.Ed., M.B.A.  
*Statistics*  
Dean Junior College
- James W. O'Neil, A.B.  
*Law Enforcement*  
Industrial Security Consultant
- Timothy P. O'Neill, S.T.B., M.A., Ph.D., J.D.  
*Law Enforcement*
- George J. O'Shea, Jr., B.S.B.A., M.S.S.W.  
*Law Enforcement*  
Div. of Youth Services—  
Commonwealth of Mass.
- Richard H. O'Shea, Jr., B.S., M.P.A.  
*Law Enforcement*  
Dept. Public Safety, Div. State  
Police
- \*Albert J. Ottariano, B.B.A., M.S.B.A.  
*Statistics*  
U.S. Dept. of Labor
- J. Rosson Overcash, B.A., A.M.T.  
*Earth Science*  
Bunker Hill Community College
- Nancy L. Owens, B.A., M.A.  
*Sociology*  
Northeastern University
- Richard W. Paine, B.A., M.A., Ph.D.  
*Psychology*  
Emmanuel College
- Howard R. Palmer, LL.B., J.D.  
*Law Enforcement*  
294 Washington St., Boston
- Carl A. Palombo, B.S., M.Sci.  
*Branch Campus Representative*  
Lynn English High School
- Leo Panas, B.S., M.Ed.  
*Fine Arts*
- \*Robert A. Parsons, B.A.B.S., M.B.A., M.A.  
*Operations Research—*  
*Coordinator*  
Northeastern University
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*Accounting*  
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- Theodore Patrikas, B.B.A.  
*Management*  
General Electric
- Joseph V. Pearincott, B.Sc., M.Sc., Ph.D.  
*Biology*  
Northeastern University
- Martin L. Pendleton, Jr., B.S.  
*Electronic Data Processing*  
A.D.L. Systems
- Philip W. Pendleton, Ph.D.  
*Psychology*  
Northeastern University
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Marsh & McLennan, Inc.
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*Law Enforcement*  
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*Psychology*  
Harvard Medical School
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*Accounting*  
Charles Peters, C.P.A.
- D. Wayne Peters, B.A., M.P.A., M.S.A.  
*Accounting*  
Price Waterhouse & Company
- Bruce A. Petersen, B.S., Ph.D.  
*Chemistry*  
Northeastern University
- Frederick D. Peterson, A.B., M.A.  
*Sociology*  
Merrimack College
- Ausrele M. Petronis, B.A., M.A.  
*English*  
Northeastern University
- Robert G. Phelan, B.S., J.D.  
*Law Enforcement*  
Phelan & Phelan
- Shirley A. Phelan, A.B., J.D.  
*Administration of Justice*  
Phelan & Phelan
- Diane Piekut, B.S., M.S.  
*Human Anatomy & Physiology*
- \*George G. Pierce, A.B., J.D.  
*Law*  
U.S. Administrative Law Judge
- Samuel Pietropaolo, B.A., M.A., M.S.W.  
*Law Enforcement*  
Revere Public Schools
- Benjamin E. Pike, B.S., M.B.A.  
*Management*  
Massasoit Community College
- Gerald T. Pineault, B.B.A., M.B.A.  
*Management*  
Polaroid Corp.
- Garth I. Pitman, B.A., M.A., M.A., Ph.D.  
*English*  
Harvard University
- Aldo M. Pitt, B.S.  
*Biology*  
Northeastern University
- Carmen S. Pizzuto, A.B., M.A., M.S.W.,  
Ph.D.  
*Law Enforcement*  
Department of Youth Services
- Andrew Plotkin, B.A., M.S., Ph.D.  
*Law Enforcement*  
Northeastern University
- Gladys M. Polansky, B.A., B.S., M.A.  
*English*
- \*John D. Post, A.B., M.A., Ph.D.  
*History*  
Northeastern University
- James Poulos, B.A., M.A.  
*English*  
Newbury College
- \*Edward J. Powers, B.B.A., M.B.A., M.Ed.  
*Industrial Management*  
Consultant in Mgmt. & Education
- William J. Powers, B.S.  
*Law Enforcement*
- John T. Prendergast, A.A., LL.B.  
*Law Enforcement*  
Dept. of Public Safety,  
Commonwealth of Mass.
- G. Daniel Prigmore, B.A., M.B.A.  
*Real Estate*  
G. Daniel Prigmore
- Fred M. Proodian, B.S., M.B.A.  
*Accounting*  
U.S.M. Corp.
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*Law*  
Sloane, Puopolo, & Carr

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Northeastern University
- Cathleen T. Quirk, B.A., M.A.  
*English*  
Northeastern University
- Daniel B. Rakov, A.B., LL.B.  
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Boston State College
- James H. Reeves, B.A.  
*Chemistry*  
Northeastern University
- Denis G. Regan, B.S., J.D.  
*Law*  
Attorney at Law
- Richard M. Regan, A.B., LL.B.  
*Labor Management*  
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*English, Speech*  
Northern Essex College
- Michael J. Reilly, B.B.A., M.B.A.  
*Corporate Finance*  
Halsey Stuart & Co.
- Philip J. Reilly, Jr., B.S.  
*Law Enforcement*  
Commonwealth of Mass., Dept.  
of Public Safety
- Alice E. Richmond, A.B., J.D.  
*Law Enforcement*  
Office of the District Attorney
- Frederick W. Riley, B.S., M.A., J.D.  
*Law Enforcement*  
Bongiorno & Fogarty
- J. Scott Riley, B.S., A.E.  
*Marketing*  
JSR Associates
- Anthony J. Rizzo, A.S., B.S.  
*Law Enforcement*  
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- Dennis A. Robbins, B.A., M.A., Ph.D.  
*Philosophy*
- Raymond H. Robinson, B.A., M.A., Ph.D.  
*History—Consultant*  
Northeastern University
- Leo F. Roche, Jr., A.B., LL.B.  
*Cap. Inst. & Risk Mgmt.*  
American Mutual Liability  
Insurance Co.
- Cephas B. Rogers, B.S.M.E., M.S.  
*Quality Control*  
Polaroid Corp.
- Francis C. Rogers, B.S.  
*Law Enforcement*  
Haverhill Police Dept.
- \*Lawrence J. Romano, B.S., M.A.  
*Law Enforcement, Modern  
Languages*  
The Charles Stark Draper Lab  
Inc.
- Paul G. Ronco, B.S., M.A., Ph.D.  
*Psychology*  
Salem State College
- Robert D. Ronssheim, A.B., A.M.  
*History*  
Boston 200
- Hilde Rosbash, B.S.  
*Health Science*  
Beth Israel Hospital
- Steven J. Rosen, B.A., M.A., Ph.D.  
*Political Science*  
Brandeis University
- Fred A. Rosenberg, A.B., Ph.D.  
*Biology—Consultant*  
Northeastern University
- Morris E. Rosenberg, B.S., B.A.  
*Accounting*  
Massasoit Community College
- Joel M. Rosenfeld, B.S., M.S.  
*Industrial Management—  
Consultant*  
American Biltrite, Inc.
- Arthur E. Rosenstein, B.A., M.A.  
*History*
- \*Albert H. Ross, B.S., LL.B.  
*Personnel & Industrial Relations*  
Attorney, U.S. Dept. of Labor
- David Ross, B.M.E., M.S.E.E.  
*Quality Control*  
G.E.
- Robert J. Roth, B.B.A.  
*Law Enforcement*  
Mass. Dept. of Public Safety
- Harvey F. Rowe, Jr., A.B., J.D.  
*Law Enforcement*  
Asst. Attorney General,  
Commonwealth of Mass.
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*Transportation*  
Stone & Webster Engineering  
Corp.
- \*Gerald R. Rubin, B.B.A., C.P.A.  
*Accounting*  
Partner Greene, Rubin & Miller
- Richard V. Rude, B.A.  
*Modern Languages*  
Newton North High School
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*Labor Management Relations*  
Louis Rudzinsky Associates
- Edward F. Ryan, A.S., B.S.  
*Law Enforcement*  
Revere Police Dept.
- \*Frank L. Ryan, A.B., M.A., Ph.D.  
*English*  
Stonehill College
- John D. Ryder, A.B., M.S.A., C.P.A.  
*Accounting*  
Price Waterhouse
- \*Charles Saccardo, B.S.B.A., M.A.  
*Economics*  
Lowell Technological Inst.
- Mabel M. Sahakian, A.B., D.Sc., S.T.B.  
*Philosophy*
- Robert P. St. Amand, B.A., M.S.Ed., M.S.  
*Chemistry*  
Northeastern University
- \*Charles L. Sakey, A.B., M.A.  
*Modern Languages*  
Boston Latin School

- Mary E. Salus, B.S., M.A.  
*Sociology*  
Dept. of Public Welfare
- Herbert J. Sandberg, B.S., M.S.  
*Industrial Decision Making*  
Dynamics Research Corp.
- Steven Sands, B.A., Ph.D.  
*English*  
Northeastern University
- Enrico V. Sasso, B.S., M.A.  
*Branch Campus Representative*  
Haverhill High School
- \*Willis L. Saulnier, A.B., M.S.W.  
*Labor Management Relations*  
Raytheon Co.
- Alae-Eldin Sayed, B.S., M.S., Ed.D.  
*Therapeutic Recreation*  
Northeastern University
- Stephen Schafer, D.Jur., Prof. Agrege  
*Sociology—Criminology*  
Law Enforcement Consultant  
Northeastern University
- Bary D. Scheckner, B.B.A., M.B.A.  
*Accounting*  
Price Waterhouse & Co.
- Joan E. Schiller, B.S., M.T. (ASCP), M.S.  
*Health Science*  
Quincy City Hospital
- Roy M. Schoenfeld, B.S., J.D.  
*Labor-Management Relations*  
Nat'l Labor Relations Board
- \*Mary L. Schroeder, B.S., M.C.S.  
*English*  
Boston University
- \*Herbert J. Schwartz, B.S.  
*Marketing*  
Sales Management Consultant
- William J. Scott, B.S., M.B.A.  
*Management*  
Quinsigamond Community  
College
- Richard S. Seaman, B.A., M.A.  
*Human Relations*  
Northeastern University
- William E. Sears, B.S., M.Ed.  
*Law Enforcement*  
Dept. of Youth Service
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*Library Science*  
Boston College
- Peter M. Selig, M.B.A., M.A.  
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*Philosophy*
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*Art*  
Northeastern University
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*Political Science*
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*Economics—Statistics*  
Suffolk University
- Paul H. Shapiro  
*Art*  
Northeastern University
- \*Samuel Shapiro, A.B., M.B.A., C.P.A.  
*Corporate Finance*  
Samuel Shapiro & Co., CPA's
- Arvind Sharma, B.A., M.A.  
*Economics*  
Harvard Divinity School
- Eugene H. P. Shaw-Colyer, B.A., S.T.B.,  
M.A., A.M.  
*History*  
Harvard University
- Ezra H. Sheffres, B.S.E.E., M.B.A.  
*Management*  
Raytheon Co.
- Carolyn F. Shettle, B.A., M.A., Ph.D.  
*Sociology*
- George E. Shire, B.S., J.D.  
*Law Enforcement*  
Asst. District Attorney,  
Norfolk County
- Jeannette Saquet Shire, B.A., M.A.  
*Sociology*  
Boston Alcohol Detoxification  
Project
- Alan R. Shneider, B.S.B.A., M.B.A., C.P.A.  
*Accounting*  
Self Employed
- \*Ruth E. Shore, B.S., M.A.  
*English*  
Fisher Junior College
- Ronald A. Shulman, B.E., M.S., Chem. Eng.  
*Marketing*  
Business Communication  
Services, Inc.
- Paul Sibley, B.A., J.D., M.Ed.  
*Law Enforcement*  
Attorney
- James R. Siebold, B.A., M.A., Ph.D.  
*Psychology*  
U S Army Natick Labs
- Herbert Silverman, Mus.B., Ed.M., Ed.D.  
*Music*  
Northeastern University
- Marilyn P. Silvestri, B.A., M.S.  
*Speech—Educational Research*  
Boston College
- S. Murray Simons, B.S.B.A., M.B.A.  
*Accounting*  
Newton College of the  
Sacred Heart
- Eric A. Simonsen, B.S., M.B.A.  
*Accounting*  
Price Waterhouse
- James S. Skall, B.A., M.B.A.  
*Marketing*  
United Way of Mass Bay
- \*Lloyd A. Skiffington, B.A., A.M., Ph.D.  
*English*  
Northeastern University
- \*William I. Sloane, A.B., LL.B.  
*Law*  
Sloane, Gay, & Puopolo
- William G. Slowe, A.S., B.S.  
*Law Enforcement*  
Needham Police Dept.
- Barbara A. Smith, B.A., J.D.  
*Law Enforcement*
- Edwin Smutz, B.A., M.S., Ph.D.  
*Psychology*  
U.S. Army Natick Research Labs
- Paul E. Snoonian, B.S., M.B.A., M.A., Ph.D.  
*Economics*  
Lowell Technological Institute
- \*Leo Snyder, B.A., M.M.  
*Music*  
Northeastern University
- \*Christos Socarides, A.B., M.A.  
*English*  
Brockton Public Schools

- Sulo A. Soini, B.B.A., M.B.A.  
*Industrial Management*  
Commonwealth of Mass.
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*Literature*
- David Sonnenschein, M.A.  
*Music*  
Northeastern University
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Ph.D.  
*History*  
Worcester State College
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*Journalism*
- Thomas S. Sprague, A.B.  
*Law Enforcement*  
Northeastern University
- Francis C. Stacey, A.B., M.B.A.  
*Management & Organization*  
Computer Processing Unit,  
Mass. Dept. of Public Health
- George H. Stacey, Jr., A.B., M.B.A.  
*Electronic Data Processing*  
AVCO Everett Research Lab.
- Lee B. Staebler, B.S., M.B.A.  
*Accounting*  
Business Consultant
- Charles K. Stefanidakis, B.S.B.A.,  
M.B.A., C.P.A.  
*Cost Accounting*  
Rohrstein Corp.
- Alan E. Steinberg, B.S., J.D.  
*Real Estate*  
Attorney, Kabatznick, Stern  
& Cooper
- Thomas J. Stockett, B.S.  
*Human Relations in Personnel*  
Balco, Maintenance Manager
- \*Edmund Stoddard, Jr., B.A.  
*English, Literature*  
Raytheon Service, Inc.
- Joseph F. Stoltz, B.A., M.A., Ph.D.  
*Economics*  
Manpower Administration
- \*Robert C. Story, B.A.  
*Personnel & Industrial Relations*  
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*Political Science*  
Roger Williams College
- James J. Stratford, Jr., LL.B.  
*Law Enforcement—Consultant*
- Esther H. Strauss, B.A., M.A., M.Ed.  
*Sociology*  
Boston University Medical School
- Albert W. Sullivan, A.B., J.D.  
*Real Estate*  
Asst. Regional Counsel,  
U.S. Postal Service
- Cornelius J. Sullivan, LL.B.  
*Law Enforcement*  
Attorney
- \*Frank E. Sullivan, A.B., Ed.M.  
*English*  
Boston Trade School
- \*Jeremiah G. Sullivan, B.S.  
*Computer Programming—*  
*Coordinator*  
Honeywell Information  
Systems, Inc.
- Peter G. Sullivan, A.S., B.S.  
*Law Enforcement*  
Sudbury Police Dept.
- Joseph L. Supple, A.B.  
*Computer Programming*  
A.D.L. Systems, Inc.
- Gerald Sussman, B.S., A.M.  
*Marketing*  
Bryant College
- Wayne A. Sutcliffe, B.B.A., M.B.A.  
*Finance*  
N.E. Merchants Nat'l Bank
- John T. Sweeney, B.S., LL.B.  
*Law Enforcement*  
Administrative Law Judge,  
S.S. Admin.
- Joseph Sweeney, B.S.Ed., M.Ed., M.B.A.  
*Computer Programming*  
American Mutual Insurance Co.
- Allen M. Swenson, B.S.B.A., M.B.A.  
*Economics*  
Raytheon Co.
- George J. Swidler, B.S., M.Ed.  
*Law Enforcement—Consultant*  
Polygraph Examiner
- Lawrence E. Symington, A.B., M.A., Ph.D.  
*Psychology*  
U.S. Army Natick Labs
- William R. Synnott, B.S.  
*Corporate Finance*  
First Nat'l Bank of Boston
- Priscilla D. Taft, M.D.  
*Cytopathology*  
Mass. General Hospital
- Hugh J. Talbot, A.S., B.S.  
*Law Enforcement*  
P. L. Abelson, Co.
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B.J.Ed.  
*English*  
Stoughton High School
- Theodore A. Tasis, B.S., M.A.  
*English*  
Raytheon Co.
- Alan M. Tattle, B.S., M.Ed.  
*Electronic Data Processing*  
English High School
- Paul H. Tedesco, A.B., A.M., Ph.D.  
*History*  
Northeastern University
- Philip R. Tetu, A.B., J.D.  
*Law Enforcement*  
Attorney at Law, Natick
- \*Alan P. Thayer, Col., U.S. Army (Ret.),  
B.S., M.B.A.  
*Economics*  
Boston College
- Emile F. Thibault, B.S.  
*Law Enforcement*  
Dept. of Public Safety
- Wendy W. Thompson, B.A., M.Litt.  
*History*  
Lexington Public Schools
- Henry L. Tischler, A.B., M.A.  
*Sociology*  
Framingham State College
- Jeffrey J. Title, B.A., M.S.  
*Law Enforcement*  
Charles River Counseling Center
- William J. Tobin, B.S.  
*Law Enforcement*  
M.D.C. Police Captain

- Ronald C. Tocci, B.S.  
*Accounting*  
Financial Consultant
- Richard T. Torto, B.S., J.D.  
*Law Enforcement*  
Attorney at Law
- Rosario J. Tosiello, A.B., A.M., Ph.D.  
*History*  
Pine Manor Junior College
- Allan Tosti, B.A., M.A.  
*Political Science*  
Northeastern University
- James C. Trainor, A.B., N.M., A.S.C.P.  
R.T., A.R.R.T.  
*Nuclear Medicine*  
St. Vincent Hospital
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*Oceanology*  
Northeastern University
- James D. Turley, B.Ph., B.A., M.Ed.,  
M.A., Ed.D.  
*English*  
Rhode Island College
- David W. Tutein, B.A., M.A.  
*English*  
Northeastern University
- Theresa H. Twombly, B.A., M.A.  
*Sociology*  
Mount Wachusett Community  
College
- \*John A. Tyrell, B.S., M.S.Ed., Ed.D.  
*Science*  
Boston Public Schools
- Alint V. Varughese, B.A., M.A., Ph.D.  
*English*  
Bentley College
- \*Harvey Vetstein, B.A., M.A.  
*Associate Consultant, English*  
Northeastern University
- Pauline S. Vexler, B.A., M.A.  
*English*
- Robert Vitale, B.S.  
*Electronic Data Processing*  
Data General Corporation
- Phillip M. Vitti, B.S., M.A.  
*Law Enforcement*  
Boston Police Dept.
- Carola T. Von Kapff, B.S.  
*Health Science*  
Harvard University
- Barbara A. Wade, A.B.  
*Basic Computer Programming*  
Computations, Inc.
- Jeffrey L. Wain, B.A., M.S.  
*Biology—Consultant*  
Northeastern University
- \*Rowell L. Waller, Jr., B.A., M.S.  
*Library Science*  
Attleboro Public Library
- Stephen J. Wallner, B.S., M.S., Ph.D.  
*Biology*  
Plant Products Division
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*Marketing*  
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*History*
- Robert L. Ward, A.B., Ed.M.  
*Law Enforcement*  
The Boston Globe
- Robert Ware, A.S., A.B.  
*Electronic Data Processing*  
Ware Associates
- Lois D. Wasserman, B.S., Ed.M., Ph.D.  
*History*  
Northeastern University
- Stanley R. Wayne, B.A., M.A., Ph.D.  
*Psychology*  
V.A. Out-Patient Clinic
- Robert C. Webb, A.B., M.A., Ph.D.  
*Psychology*  
Suffolk University
- William S. Webb, B.S., M.A.  
*Law Enforcement*  
Danvers Police Dept.
- Richard S. Wein, B.A., M.A.  
*Anthropology*  
Winthrop Public Schools
- \*Frank J. Weiner, B.S., M.B.A., J.D.  
*Transportation*  
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- Michael S. Weiner, B.S., M.B.A.  
*Marketing*  
Rand Industries, Inc.
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*Corporate Finance*  
First Nat'l Bank of Boston
- Karl Weiss, B.S., Ph.D.  
*Chemistry—Consultant*  
Northeastern University
- Arthur J. Weitzman, B.A., M.A., Ph.D.  
*English*  
Northeastern University
- Daniel A. Welch, A.S., B.S.  
*Law Enforcement*  
Marshfield Police Dept.
- \*Robert L. Wells, B.S., M.A.  
*Fine Arts—Consultant*  
Northeastern University
- Dorothy A. Wemple, B.S.  
*Health Science*  
Peter Bent Brigham Hospital
- Clifford Wenzel, A.B.  
*Personnel Industrial Relations*  
Raytheon Service Co.
- J. Bettina Werman, B.S., M.S.  
*Therapeutic Recreation*  
Dir. Newton Senior Citizen  
Centers
- Paul C. Wermuth, A.B., M.A., Ph.D.  
*English—Consultant*  
Northeastern University
- Robert Westwater, B.A., M.B.A.  
*Corporate Finance*  
Commercial Union Company
- \*Charles W. White, B.A., M.A., Ph.D.  
*English*  
Southeastern Massachusetts  
University
- Joseph White, Jr., B.S., M.S.W.  
*Social Welfare*
- Paul F. White, B.S., M.S.  
*Criminology*  
Middlesex County Probation  
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- Robert N. Wiener, B.A., Ph.D.  
*Chemistry*  
Northeastern University
- James L. Wiles, A.B., A.M.  
*Economics*  
Stonehill College

- Calvin Williams, A.B., M.A.  
*Management*  
Raytheon
- \*Elizabeth S. Williams, A.B., Ed.M., C.A.S.  
*Psychology*  
Suffolk University
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*History*
- David L. Wilmarth, B.S., Ed.M., Ph.D.  
*Earth Science*  
Northeastern University
- George R. Wilson, Jr., B.A., M.A.  
*Government, History*  
Consolidated Service Corp.
- Walter B. Winchenbach, Jr., A.E., B.S.,  
M.B.A.  
*Industrial Management*  
Hewlett Packard Company
- Arthur Wingfield, B.A., M.A., Ph.D.  
*Psychology*  
Brandeis University
- Irene P. Winner, B.A., M.A., Ph.D.  
*Anthropology*  
Brown University
- Burton Winnick, B.S., LL.B.  
*Real Estate*  
Goldstein & Winnick
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M.A., Ph.D.  
*Philosophy*
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*Management*  
U.S. Steel Corporation
- Gerald Wolper, A.B., J.D.  
*Labor Management Relations*  
Nat'l Labor Relations Board
- Philip Woodes, A.A., A.B., M.S.W.  
*Sociology*  
Private Practitioner
- \*Michael Woodnick, B.S., M.S.  
*Speech, Communication*  
Northeastern University
- Steve Worth, B.S., M.S., Ph.D.  
*Political Science—Coordinator*  
Northeastern University
- William C. Wright, B.S., M.B.A.  
*Management & Organization*  
U.S. Army Natick Labs
- Albert J. Zahka, A.B., J.D.  
*Law*  
First Nat'l Bank of Boston
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*Psychology—Consultant*  
Northeastern University
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*Personnel & Industrial Relations*  
Nat'l Labor Relations Board
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*Earth Science*  
Education Liaison—U.S. Navy
- John Zimka, B.S., M.A., Ph.D.  
*Accounting*  
Boston College
- Jeffrey J. Zornitsky, B.A., M.A.  
*Economics*  
Boston Manpower Planning Staff

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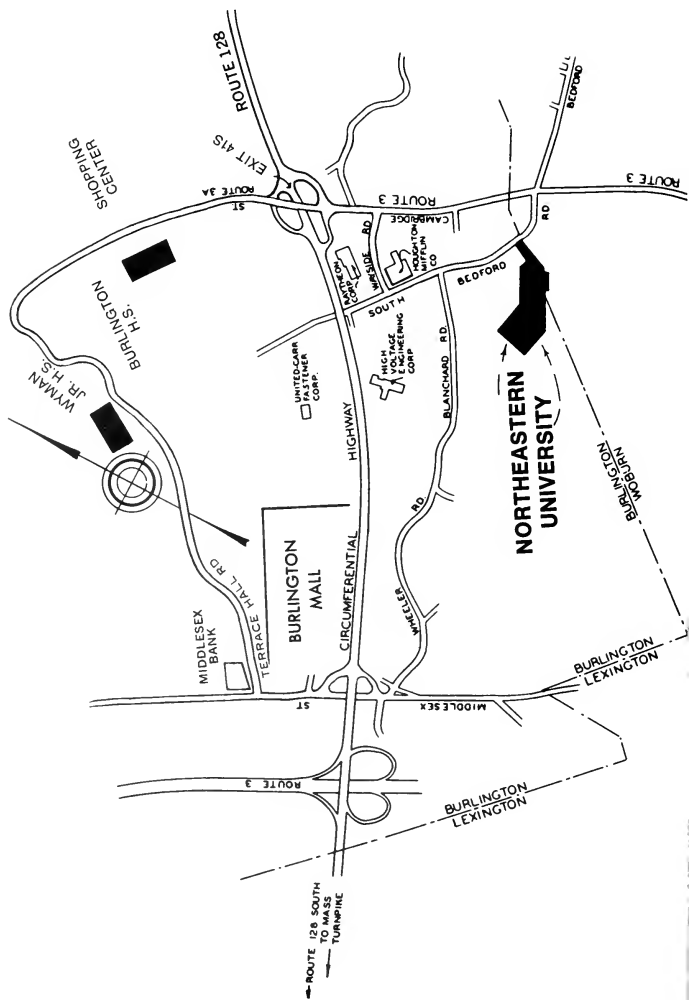
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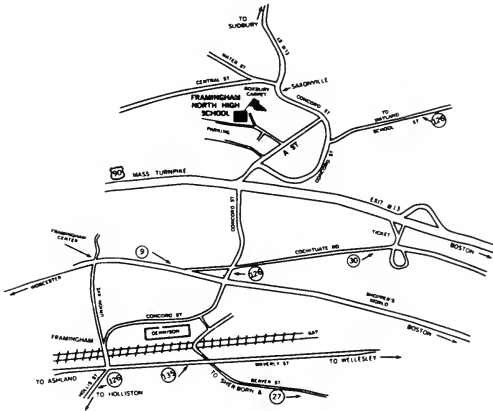
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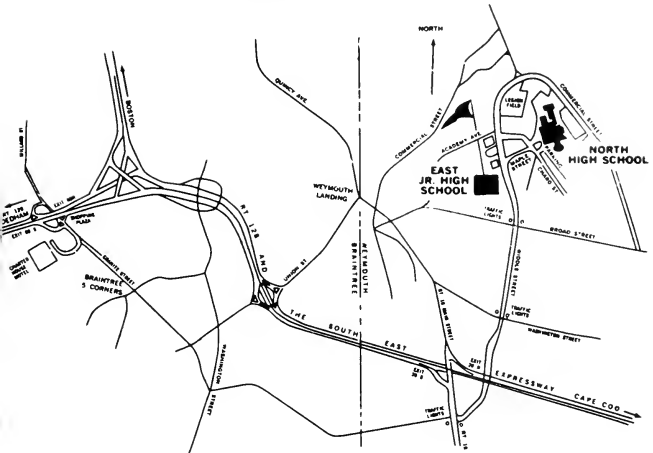
## Suburban Campus



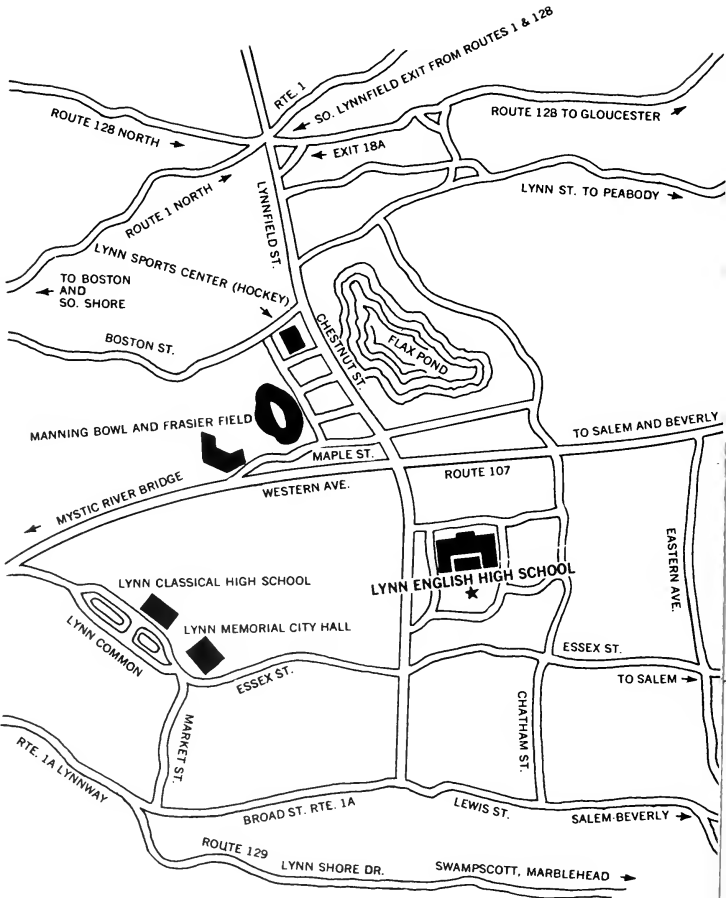
## Framingham North High School



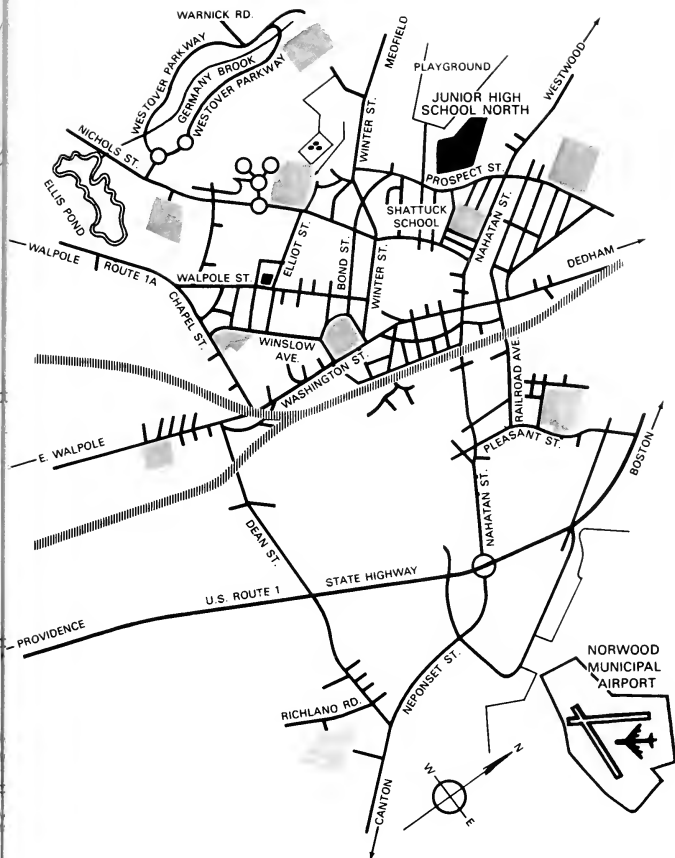
## Weymouth Schools

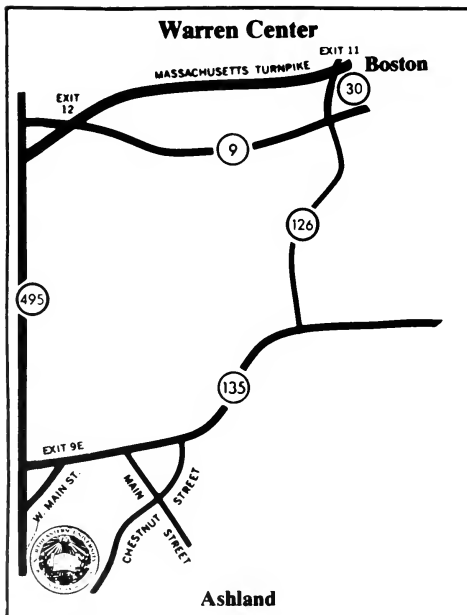


# Lynn English High School

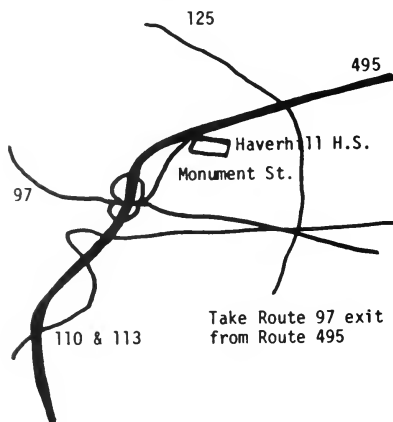


# Norwood

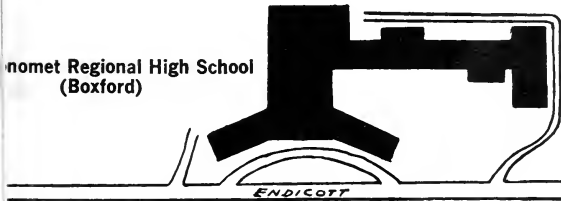
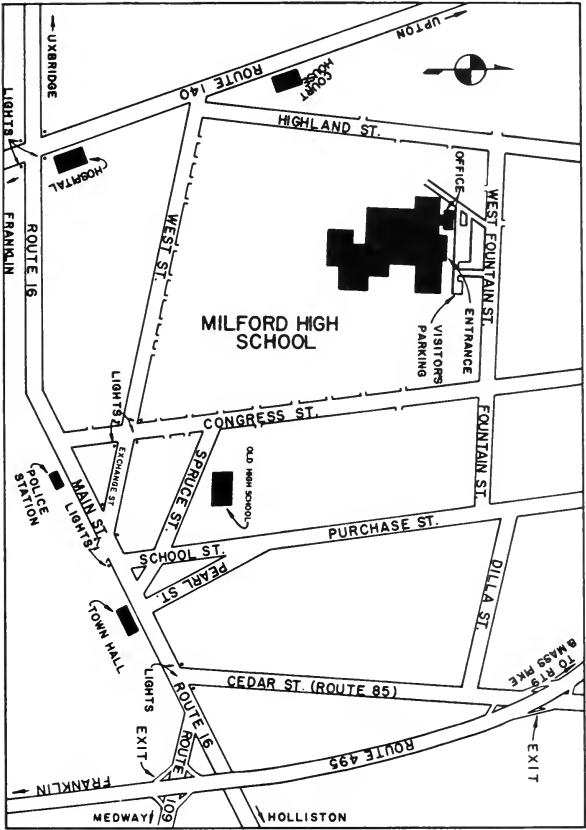




**Haverhill High School**



# Milford High School



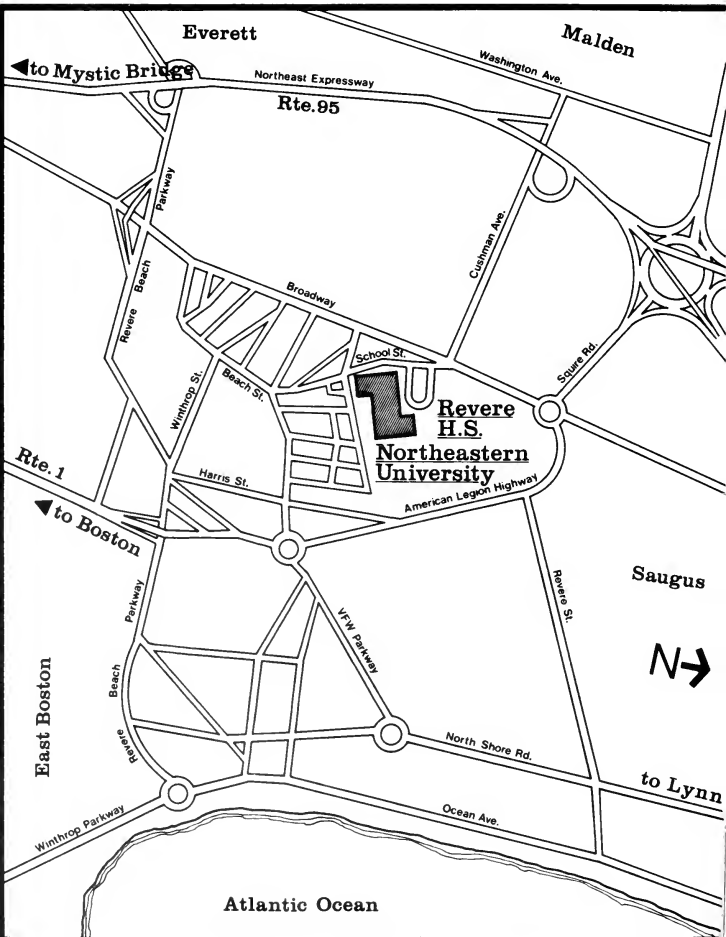
## DIRECTIONS:

FROM SOUTH - RT. 128 TO RT. 1  
RT. 1 TO RT. 95

RT. 95 TO ENDICOTT EXIT

FROM NORTH - RT. 95 TO ENDICOTT EXIT













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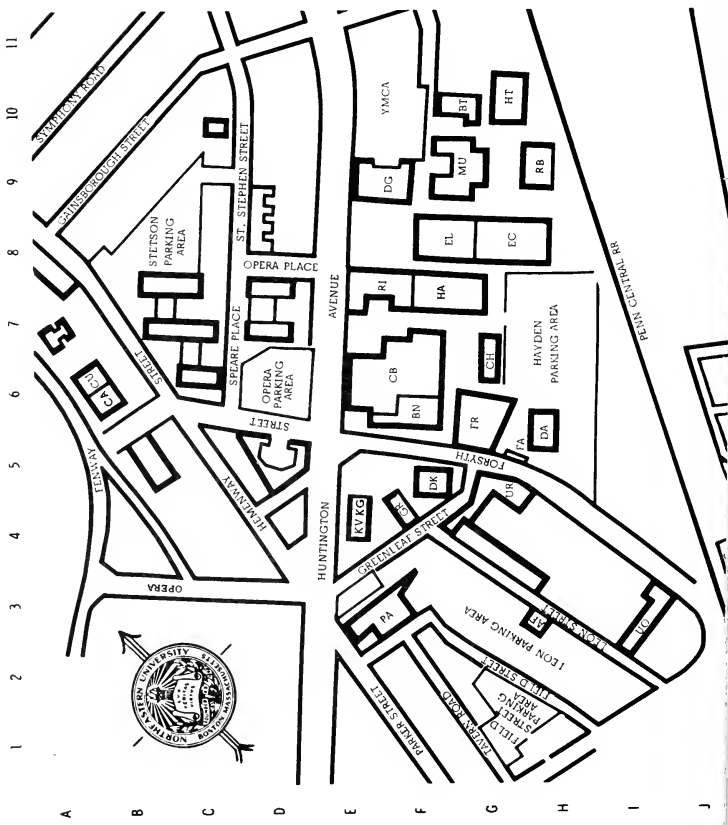
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The map shows a section of downtown Boston. At the top, a compass rose indicates North. The map is labeled with letters A through J along the top edge and numbers 1 through 11 along the left edge. Major streets include Symphony Road, Gainsborough Street, St. Stephen Street, Opera Place, Spaulding Street, Hemenway Street, Huntington Avenue, Greenleaf Street, Forsyth Street, and Tremont Street. Landmarks include the North Eastern University, St. Stephen's Church, and the Opera House. The map is divided into a grid with letters A through J along the top and numbers 1 through 11 along the left side.

## **Office Hours at Huntington Avenue Campus, Boston**

*June 16, 1975 — June 17, 1977*

Monday-Thursday ..... 8:30 A.M.-8:30 P.M.

Friday ..... 8:30 A.M.-4:30 P.M.

## **Program Counseling at Suburban Campus, Burlington**

Representatives from the Huntington Avenue Campus will be in attendance during specified dates for guidance and counseling. The bookstore and the Bursar's Office are open from 8:30 a.m.-8:30 p.m., Monday-Thursday; 8:30 a.m.-7:00 p.m. Friday; and 8:30 a.m.-12:00 p.m., Saturday.

## **Program Counseling at Extensions**

Program counselors are available on a regular schedule at Lincoln College extensions at: the Wyman Junior High School, Burlington; the North High School, Framingham; the North High School, Weymouth; the English High School, Lynn; the Junior High School North, Norwood; and the Norwood Airport, Norwood. Appointments may be arranged by telephoning the Lincoln College office at 437-2500.

## **Interviews**

Prospective students, or those desiring advice or guidance regarding any part of the school work or curricula, are encouraged to arrange for personal interviews. Career planning through competent guidance provides an understanding of professional requirements and develops that definiteness of purpose so vital to success. Lincoln College Office is located at 219 Hayden Hall at the Boston Campus.

## **Address communications to:**

William F. King, Director  
Lincoln College  
Northeastern University  
360 Huntington Avenue  
Boston, Massachusetts 02115  
Telephone 437-2500

## 1975-1976 ACADEMIC CALENDAR

### Fall Quarter 1975

Classes Begin Monday, September 29, 1975

#### FALL REGISTRATION DATES

|  |                   |  |
|--|-------------------|--|
| Boston                                       | 5:30-8:00 p.m.    | Monday-Friday,<br>September 8-12                 |
| Boston                                       | 9:00 a.m.-12 noon | Saturday, September 13                           |
| Boston                                       | 5:30-8:00 p.m.    | Monday-Thursday,<br>September 15-18              |
| Burlington                                   | 5:30-8:00 p.m.    | Monday-Thursday,<br>September 15-18              |
| Burlington                                   | 12 noon-8:00 p.m. | Tuesday, September 16                            |
| Boxford (Masconomet)                         | 5:30-8:00 p.m.    | Tuesday, September 9 and<br>Monday, September 15 |
| Framingham North H. S.                       |                   |  |
| Haverhill H. S.                              |                   |  |
| Lynn English H. S.                           |                   |  |
| Norwood Jr. H. S. North                      |                   |  |
| Revere H. S.                                 | 5:30-8:00 p.m.    | Monday, September 8 and<br>Monday, September 15  |
| Weymouth North H. S.                         |                   |  |
| Milford H. S.                                | 5:30-8:00 p.m.    | Monday, September 8 and<br>Monday, September 15  |
| Fall Quarter Classes Begin                   |                   | Monday, September 29                             |
| Columbus Day Observed                        | No Classes        | Monday, October 13                               |
| Veterans' Day Observed                       | No Classes        | Tuesday, November 11                             |
| Thanksgiving Recess                          | No Classes        | Thursday-Saturday,<br>November 27-29             |
| Final Examination Period<br>For Fall Quarter |                   | Monday, December 15-<br>Saturday, December 20    |

### Winter Quarter 1975-1976

Classes Begin Monday, January 5, 1976

#### WINTER REGISTRATION DATES

|                         |                |   |
|-------------------------|----------------|---|
| Boston                  | 5:30-8:00 p.m. | Monday-Friday,<br>December 8-12             |
| Boxford (Masconomet)    | 5:30-8:00 p.m. | Tuesday, December 9                         |
| Burlington              | 5:30-8:00 p.m. | Monday-Thursday,<br>December 8-11           |
| Framingham North H. S.  | 5:30-8:00 p.m. | Monday-Thursday,<br>December 8-11           |
| Haverhill H. S.         | 5:30-8:00 p.m. | Monday and Tuesday,<br>December 8-9         |
| Lynn English H. S.      | 5:30-8:00 p.m. | Monday and Wednesday,<br>December 8 and 10  |
| Milford H. S.           | 5:30-8:00 p.m. | Monday and Tuesday,<br>December 8-9         |
| Norwood Jr. H. S. North | 5:30-8:00 p.m. | Monday-Wednesday,<br>December 8-10          |
| Revere H. S.            | 5:30-8:00 p.m. | Tuesday and Thursday,<br>December 9 and 11  |
| Weymouth North H. S.    | 5:30-8:00 p.m. | Monday-Thursday,<br>December 8-11           |
| Christmas Vacation      | No Classes     | Monday, December 22-<br>Saturday, January 3 |

|   |            |   |
|---|------------|---|
| Winter Quarter Classes Begin                |            | Monday, January 5                       |
| Martin Luther King Day Observed             | No Classes | Thursday, January 15                    |
| Washington's Birthday Observed              | No Classes | Monday, February 16                     |
| Final Examination Period for Winter Quarter |            | Monday, March 22–<br>Saturday, March 27 |

## Spring Quarter 1976

Classes Begin Monday, April 5, 1976

### SPRING REGISTRATION DATES

|  |                |  |
|--|----------------|--|
| Boston   | 5:30–8:00 p.m. | Monday–Friday,<br>March 15–19            |
| Boxford (Masconomet)                                       | 5:30–8:00 p.m. | Tuesday, March 16                        |
| Burlington   | 5:30–8:00 p.m. | Monday–Thursday,<br>March 15–18          |
| Framingham North H. S.                                     | 5:30–8:00 p.m. | Monday–Thursday,<br>March 15–18          |
| Haverhill H. S.  | 5:30–8:00 p.m. | Monday and Tuesday,<br>March 15 and 16   |
| Lynn English H. S.   | 5:30–8:00 p.m. | Monday and Wednesday,<br>March 15 and 17 |
| Milford H. S.  | 5:30–8:00 p.m. | Monday and Tuesday,<br>March 15 and 16   |
| Norwood Jr. H. S. North                                    | 5:30–8:00 p.m. | Monday–Wednesday,<br>March 15–17         |
| Revere H. S.   | 5:30–8:00 p.m. | Tuesday and Thursday,<br>March 16 and 18 |
| Weymouth North H. S.                                       | 5:30–8:00 p.m. | Monday–Thursday,<br>March 15–18          |
| Spring Recess (or Make-Up<br>Period for Lost Snow<br>Days) |                | Monday, March 29–<br>Saturday, April 3   |
| Spring Quarter Classes Begin                               |                | Monday, April 5                          |
| Patriot's Day Observed                                     | No Classes     | Monday, April 19                         |
| Memorial Day Observed                                      | No Classes     | Monday, May 31                           |
| Final Examination Period<br>for Spring Quarter             |                | Tuesday, June 14–<br>Monday, June 19     |
| Commencement   |                | Sunday, June 20                          |

## Summer Quarter 1976

Classes Begin Monday, June 28, 1976

### REGISTRATION FOR ENTIRE SUMMER QUARTER

|                              |                   |                             |
|------------------------------|-------------------|-----------------------------|
| Boston                       | 5:30–8:00 p.m.    | Monday–Friday,<br>June 7–11 |
| Burlington                   | 12 noon–8:00 p.m. | Tuesday, June 8             |
| Summer Quarter Classes Begin |                   | Monday, June 28             |

### REGISTRATION FOR SECOND SIX-WEEK TERM

|  |                |   |
|--|----------------|---|
| Boston   | 5:30–8:00 p.m. | Monday and Tuesday,<br>July 26 and 27           |
| Burlington                                     | 5:30–8:00 p.m. | Monday, July 26                                 |
| Independence Day Observed                      | No Classes     | Monday, July 5                                  |
| Labor Day Observed                             | No Classes     | Monday, September 6                             |
| Final Examination Period<br>for Summer Quarter |                | Monday, September 13–<br>Thursday, September 18 |

### **Equal Opportunity Policy**

Northeastern University is committed to a policy of providing equal opportunity for all. In all matters involving admission, registration, and all official relationships with students, including evaluation of academic performance, the University insists on a policy of nondiscrimination. Northeastern University is also an equal opportunity employer; it is institutional policy that there shall not be any discrimination against any employee or applicant for employment because of race, color, religion, sex, age, national origin, or physical or mental handicap. In addition, Northeastern takes affirmative action in the recruitment of students and employees.

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# the university

Founded in 1898, Northeastern University is incorporated as a privately endowed, nonsectarian institution of higher learning under the General Laws of Massachusetts. The State Legislature, by special enactment, has given the University general degree-granting powers. The University is governed by a Board of Trustees elected by and from the Northeastern University Corporation, which is composed of more than 150 distinguished business and professional men and women.

From its beginning Northeastern University has had as its dominant purpose the discovery of community educational needs and the meeting of these in distinctive and serviceable ways. The University has not duplicated the programs of other institutions, but has sought to pioneer new areas of educational service.

A distinctive feature of Northeastern University is its Cooperative Plan, initiated by the College of Engineering in 1909 and subsequently adopted by the Colleges of Business Administration (1922), Liberal Arts (1935), Education (1953), Pharmacy (1962), Nursing (1964), Boston-Bouvé College (1964), the College of Criminal Justice (1967), and by Lincoln College's Engineering Technology Programs (1971). As an educational method the Cooperative Plan enables students to gain valuable practical experience as an integral part of their college programs, and also provides the means by which they may contribute substantially to the financing of their education. The Plan has been extended to the graduate level in engineering, mathematics, actuarial science, rehabilitation administration, professional accounting, business administration, and law.

In the field of adult education, programs of study have been developed to meet a variety of needs. Since 1906 evening curricula have been offered leading to the bachelor's degree. Programs in the arts and sciences, engineering, various fields of business, law enforcement and security, and other areas have been carefully planned to serve mature students who are employed full-time during the day and want to broaden their educational background by part-time study. All formal courses of study leading to degrees through evening programs are approved by the Basic College faculties concerned and are subject to the same quantitative and qualitative standards as the regular day curricula.



## UNDERGRADUATE COLLEGES

### **Boston-Bouvé College**

Boston-Bouvé College offers four major programs of study: physical education, recreation education, and health education, all leading to the degree of Bachelor of Science in Education; and physical therapy, leading to the degree of Bachelor of Science in Physical Therapy.

The combined programs of liberal arts, science, and professional preparation include field experience and student teaching, and leadership training in camping and outdoor education at the Warren Center for Physical Education and Recreation in Ashland. In accordance with Northeastern's Cooperative Plan of Education, students are offered varied opportunities for alternate terms of work-study experience during upperclass years.

### **The College of Business Administration**

The College of Business Administration offers programs of study in the principal fields of business leading to the degree of Bachelor of Science in Business Administration. These programs are offered on the five-year Cooperative Plan, under which students gain substantial practical experience in the fields for which they are preparing as an integral part of their undergraduate course of study.

The College also sponsors a Management Institute which offers various special courses for business and industrial executives. One phase of the Institute's work is carried on by the Center for Management Development, which annually conducts an intensive program designed to provide professional growth for middle-management executives who will ultimately be called upon to carry broader executive responsibilities. The plan of instruction, based on a modification of the Northeastern Cooperative Program, permits the participants to maintain their job responsibilities during the six-month period of the course. The Management Development Program is conducted at Andover, Massachusetts, on the campus of Andover Academy.

### **College of Criminal Justice**

The College of Criminal Justice offers full-time day curricula on the Cooperative Plan leading to the degree of Bachelor of Science.

### **The College of Education**

The College of Education offers programs leading to the degree of Bachelor of Science in Education. These are particularly designed to meet the needs of high school graduates who desire to prepare them-

selves for teaching or administrative positions in elementary and secondary schools. Curricula are offered on the five-year Cooperative Plan, which provides for employment in libraries, social service agencies, and school systems.

### **College of Engineering**

The College of Engineering offers five-year cooperative curricula in civil, mechanical, electrical, chemical, and industrial engineering leading to the degree of Bachelor of Science with specification according to the engineering department in which the student qualifies. The College also offers a general engineering program, awarding an unspecified Bachelor of Science degree, in which the student has the opportunity to design his own program with his career objectives in mind. A six-year program in power systems engineering in collaboration with public utilities leads to both the bachelor's and master's degree in electrical engineering. During evening hours part-time programs leading to the Bachelor of Science degrees in Electrical Engineering and Civil Engineering are conducted. These programs extend over eight years, cover the identical courses given in the day cooperative curriculum, and meet the same qualitative and quantitative standards of scholarship.

### **College of Liberal Arts**

The College of Liberal Arts offers majors in the arts and sciences leading to the degree of Bachelor of Arts. With the exception of preprofessional programs, curricula are normally five years in length and operate on the Cooperative Plan.

### **Lincoln College**

Lincoln College offers engineering technology programs leading to the Associate in Engineering, the Associate in Science, and the Bachelor of Engineering Technology degrees. These programs are made available as:

- (a) A full-time day curricula on the Cooperative Plan leading to the degree of Bachelor of Engineering Technology (B.E.T.) in Mechanical or Electrical Engineering.
- (b) A part-time evening program including pretechnology preparatory courses and degree programs leading to the Associate in Engineering (A.E.); and the Bachelor of Engineering Technology (B.E.T.) in Civil, Mechanical, or Electrical Engineering. The Associate in Science degree may be earned in the Mathematical, Physical, and Chemical Sciences.

- (c) Lincoln College part-time students whose work schedule does not permit them to attend regular evening classes may register for a maximum of 8 quarter hours of course work per quarter in the Lincoln College Day Program.

Registration materials will be available Monday through Friday in Room 219 Hayden Hall, Boston Campus only, during the week preceding the start of each quarter. The day class schedule will not be available at other campus locations. The Registrar will not accept registration materials for day classes without the approval of the Director of Lincoln College. Tuition will be billed at normal evening part-time rates.

Interested students should consult course listing (page 164) to determine equivalent day courses.

The day B.E.T. program is designed to meet the needs of the high school graduate or the student transferring from a community college or technical institute and who desires the full-time day curricula on the Northeastern Cooperative Plan.

In addition to its traditional curricula, Lincoln College Evening School offers interdisciplinary and certificate programs providing technological and professional development opportunities to meet special needs of the part-time student. These programs are designed to provide trained people for ready assimilation by the engineering field and to prepare students for the challenge of interfacing technology and society.

Recognizing the increasing need for higher levels of technical efficiency in fire investigation, fire prevention, and fire protection, Lincoln College, in collaboration with local firefighting agencies, has designed a part-time evening program leading to an Associate in Science degree in Fire Technology. The curriculum includes a broad spectrum of those science technologies which are basic in coping with the firefighting problems attendant to the complexities of today's society.

### **College of Nursing**

The College of Nursing offers two separate and distinct programs of study, both organized on the Cooperative Plan:

- (a) A three-year curriculum in preparation for the R.N. Examinations leading to the Associate in Science degree.
- (b) A five-year curriculum also preparing students for the R.N. Examinations, and leading to the degree of Bachelor of Science in Nursing.

Five of Boston's leading hospitals — Beth Israel, Children's Hospital Medical Center, New England Deaconess, Peter Bent Brigham, and Massachusetts General — collaborate with Northeastern by providing suitable cooperative work opportunities during the upperclass years of these programs.

### **College of Pharmacy and Allied Health Professions**

The College of Pharmacy and Allied Health Professions offers five-year cooperative curricula leading to the degree of Bachelor of Science in Pharmacy, and to the Bachelor of Science degree with majors in medical laboratory science (medical technology, cytotechnology, hematology), medical record administration, and management in health care agencies and institutions. Associate degree programs are offered in medical laboratory science, respiratory therapy, dental hygiene, and cytotechnology. The College has academic responsibility and, in cooperation with the medical schools and teaching hospitals in the Boston area, offers the professional program for physician assistants.

### **University College**

University College, so called because it draws upon the resources of the other colleges of the University, offers part-time programs in Liberal Arts, Business Administration, Law Enforcement, Education, and Health, leading to the Associate in Science, Bachelor of Arts, and Bachelor of Science degrees. It does not duplicate the offerings of the day college, but provides curricula which cut across traditional subject-matter areas to meet the particular needs of adult students. Students may pursue a degree or simply take courses, based on needs and interests, up to a total of forty quarter hours of credit. Courses are offered in Boston as well as at Boxford, Burlington, Framingham, Lynn, Haverhill, Milford, Weymouth, and several other convenient locations.

Adult Day Programs refers to University College courses that are offered Monday through Friday, 9:00 a.m. to 5:00 p.m., to meet the needs of adults with family or other obligations who wish to engage in part-time study during the day. In addition to the daytime offering of regular University College credit courses, Adult Day Programs also offers daytime workshops and conferences, sometimes over weekends, with the option for credit. Adult Day Programs are offered primarily on the Boston and Burlington campuses, with a limited number of courses offered at other off-campus locations.

Students may enroll as degree candidates or elect single courses appropriate to their needs and interests. Courses are scheduled in the day and evening at the Boston Campus, Suburban Campus in Burlington, and other off-campus locations near Boston.

## GRADUATE SCHOOLS

### Actuarial Science

Master of Science in Actuarial Science.

### Arts and Sciences

The Master of Arts degree may be earned in economics, English, history, political science, psychology, sociology, and social anthropology. The Master of Science degree is available in biology, chemistry, mathematics, and physics. The Master of Science in Health Science and the Master of Public Administration degrees are also offered. In addition, there are programs leading to the Doctor of Philosophy degree in biology, chemistry, economics, mathematics, physics, psychology, and sociology.

### Boston-Bouvé College

Master of Science in Physical Education and Master of Science in Recreation Education.

### Business Administration

Master of Business Administration.

### Criminal Justice

Master of Science in Criminal Justice.

### Education

Master of Education, Doctor of Education, and the Certificate of Advanced Graduate Study.

### Engineering

Master of Science with course specification, including a special six-year program in Power Systems Engineering leading to both bachelor's and master's degrees in Electrical Engineering; a similar six-year program in Mechanical Engineering leading to both bachelor's and master's degrees; the Master of Science degree in Civil Engineering; master's degrees in Industrial Engineering and Engineering Management; the professional Engineer degree in Electrical Engineering; the Doctor of Engineering degree in Chemical Engineering; and the Ph.D. degree in the Electrical, Chemical, Civil, and Mechanical Engineering. In addition, the intermediate degree of Engineer is offered.

## **Law**

The School of Law offers a full-time program of professional instruction leading to the degree of Juris Doctor (J.D.). The three-year curriculum includes twelve months of experience in law offices. There are no courses for part-time or evening students.

## **Pharmacy and Allied Health Professions**

Master of Science with specialization in Hospital Pharmacy, Industrial Pharmacy, Medical Chemistry, Pharmacology, Medical Laboratory Science, and Doctor of Philosophy in Medical Chemistry.

## **Professional Accounting**

A five-quarter curriculum leading to the degree of Master of Science in Accounting.

Some of these programs are offered on the Cooperative Plan; others provide teaching and research fellowships for able candidates. The graduate schools are under the jurisdiction of the basic college deans.

## **CENTER FOR CONTINUING EDUCATION**

The Center for Continuing Education was established to relate the University to the needs of its community in a period of accelerated change. Its programs are composed of seminars, conferences, institutes, forums, and a wide variety of special courses designed to serve specific needs. The Division of Special Programs, working cooperatively with trade associations and professional societies, offers a wide variety of programs dealing with current needs and problems. Through its Division of Community Services, working with governmental agencies and community organizations, the Center is becoming increasingly involved in social problems on both the local and national level.

Many of these programs are conducted at Henderson House, Northeastern University's conference center in Weston, Massachusetts.

## **OFFICE OF EDUCATIONAL RESOURCES**

The Office of Educational Resources exists to provide (1) facilities and services that enhance student learning; (2) instructional services and equipment that assist faculty in providing efficient and effective instruction; and (3) research and development directed toward the ultimate implementation of empirically tested instructional systems and innovations. The Instructional Systems Analysis Group, a Special Projects Group, and three divisions — Programmed Learning, Instructional Media, Instructional Communications — carry out the objectives.

Of particular student interest is the Center for Programmed Study located in 211 Dodge. There, students study courses taught via self-instructional programs, use programs to supplement course work, fulfill course prerequisite requirements, pursue remedial or review knowledge, or study just for fun. Each student's activity and progress is constantly monitored; faculty assist when content problems arise. The Instructional Materials Information Center provides a central facility and clearinghouse concerning state-of-the-art information on educational technology and innovations, and houses instructional materials from preschool through graduate levels such as texts, programs, activity boxes, slides, filmstrips, illustrations, motion pictures, laboratory kits, simulations, models, video and audio tape, teacher's manuals, curriculum guides, research reports, standardized tests, and other instructional support materials.

## **DAY PROGRAMS FOR ADULTS**

These programs were developed to meet the needs of adults who wish to engage in part-time study during the day only. Noncredit courses and undergraduate and graduate degree programs are offered at the Boston and Burlington campuses. Included are courses from the Graduate School of Education, the Graduate School of Arts and Sciences, University College, and the Center for Continuing Education. A Human Relations and Adult Counseling Program is also offered.

## **AFFILIATED PROGRAMS**

### **For Dental Hygienists**

The Forsyth School for Dental Hygienists conducts a two-year program of dental hygiene education and general education in cooperation with Northeastern University. Graduates of the program receive the Certificate in Dental Hygiene from Forsyth and the degree of Associate in Science from Northeastern University. After receiving the Associate degree, students may pursue the Bachelor of Science degree from University College on a part-time basis.

### **Aviation Technology**

Lincoln College, in collaboration with Wiggins Airways, Inc., conducts full-time day programs in Aviation Technology in which the student earns the Associate in Science degree and may become licensed by the Federal Aviation Administration with commercial, instrument, and instructor pilot ratings.

### **Medical Record Science**

The University, in affiliation with several area hospitals, offers a three-year program leading to certification in Medical Records Science for students who already hold a bachelor's degree and wish to qualify for the professional examination leading to registration as a record librarian.

### **For Medical Technologists, Cytotechnologists, Hematologists**

In cooperation with the New England Baptist and the New England Deaconess Hospitals, Northeastern University offers a full-time day program on the Cooperative Plan leading to the degree of Bachelor of Science.

Bachelor of Science degree programs in Medical Technology, Cytotechnology, and Hematology are offered on a part-time basis by University College in cooperation with several approved hospital schools.

### **For Nurses**

Northeastern University offers instruction in the sciences, humanities, and social studies for student nurses from the New England Deaconess and Children's Hospital Medical Center Schools of Nursing.

### **Physician Assistant**

In cooperation with the Massachusetts Medical Society, Northeastern offers an 18-month program for the primary care physician assistant. Clinical rotations, supplemental to courses taken on campus, take place at Boston-area hospitals.

### **For Radiologic Technologists**

University College, in collaboration with more than fifty A.M.A.-accredited Hospital Schools of Radiologic Technology located in the New England area, conducts a program leading to certification as a registered Radiologic Technologist (R.T.) and the Associate in Science degree.

### **For Respiratory Therapists**

This program is conducted by University College and the College of Pharmacy and Allied Health Professions in affiliation with local hospitals.



# **buildings and facilities**

## **Location of Main Campus**

The main campus of Northeastern University is located at 360 Huntington Avenue in the Back Bay section of Boston. Many of the city's famous cultural, educational, and philanthropic institutions are situated in the Back Bay, including the Museum of Fine Arts, Symphony Hall, Horticultural Hall, the Isabella Stewart Gardner Museum, the Harvard teaching hospitals, and many schools and colleges. Most are within walking distance of Northeastern University.

Major transportation facilities serving the Boston area are Logan International Airport, two rail terminals, bus terminals serving inter- and intrastate lines, and MBTA subway-bus service within the metropolitan-suburban area. There is a subway stop in front of the campus. For motorists, the best routes to the campus are the Massachusetts Turnpike (Exit 22) and Route 9, of which Huntington Avenue is the intown section.

The campus of 47 acres is divided by Huntington Avenue, with the main educational buildings on one side and dormitories on the other. The principal buildings, all of which have been constructed since 1938, are of glazed brick in contemporary classic style. Some are interconnected by underground passageways.

## **Carl S. Eli Student Center**

The Carl S. Eli Student Center provides facilities for student recreation and for extracurricular activities. The Alumni Auditorium, with a seating capacity of 1,300, is part of the Center. Also included are special drama facilities, a ballroom, main lounge, fine arts exhibition area, student offices, conference rooms, and a dining area seating more than 1,000.

## **The University Library**

The Dodge Library is the main library on the Boston campus and maintains an open-stack system. Bound volumes in the library system exceed 360,000, and microform titles, 267,000. Collections are located in these areas:

1. The General Collection in the book stacks as indicated by the classification number given in the upper left corner of the catalog card.
2. The Reference Collection in the Cabot Reading Room to the left of the circulation desk, which includes bibliographies, maps, company publications, the pamphlet file, and association publications. Theses, under the supervision of the Reference Dept., are housed in the basement and should be requested in the Reference Room.
3. The Periodical Collection in the Webster Reading Room to the right of the circulation desk, consisting of current periodicals, periodical indexes, and abstracts, with two stack levels adjacent for back files of bound volumes. The Microfilm Collection in Room 108, adjacent to the Webster Reading Room.
4. The Reserve Book Collection on the second floor.
5. The Foreign Literature Collections in the Webster Reading Room to the right of the circulation desk.
6. The collections of fine arts, housed in the Richardson Room on the second floor. The audio facility for spoken and music recordings and magnetic tapes for instructional and individual use also located in this room.
7. The American and English Literature Collections in the Literature Reading Room.
8. Government documents maintained on the basement level.

There are also book catalogs of the collections in the library at Norwood Airport, Math/Psychology Library, Chemistry Library, and in both the Documents and Reserve Book Rooms. There is an information desk in the Reserve Book Room to assist people in using the card catalog during the day.

The Circulation Department has a printed list of all materials charged out, which may be consulted by all users. To borrow materials, University identification must be presented. For extensive research, where the University Library does not have the material, application should be made to the Inter-Library Loan Librarian for materials needed from other libraries. Information service is available in this department in the evenings.

**Library Hours—Boston Campus**

|                   | Regular                 | Reference and<br>Periodical Only   |
|-------------------|-------------------------|--|
| Monday—Thursday   | 7:45 a.m. to 10:00 p.m. | 10:00 p.m.—12:00 p.m.  |
| Friday            | 7:45 a.m. to 7:30 p.m.  | 7:30 p.m.—10:00 p.m.   |
| Saturday & Sunday | 1:00 p.m. to 5:00 p.m.  | 12:00 p.m.— 1:00 p.m.<br>5:00 p.m.—10:00 p.m.<br>5:30 p.m.—12:00 a.m.<br>(Sundays) |

The University Library System includes three graduate libraries in the Division of Research. Physics-electrical engineering is housed in 325 Dana Research Center. Mathematics-psychology is housed on the fifth floor of the United Reality Building and chemistry is located on the first floor of Hurtig Hall.

**Library Hours—Suburban Campus, Burlington**

|                 |                     |
|-----------------|---------------------|
| Monday—Thursday | 8:30 a.m.—9:00 p.m. |
| Friday          | 8:30 a.m.—7:00 p.m. |

Library will be open every other Saturday 1:00 p.m.—5:00 p.m.

**Cabot Physical Education Center**

The Godfrey Lowell Cabot Physical Education Center is one of the best equipped in New England. It contains four basketball courts, an athletic cage, a women's gymnasium, and a rifle range, as well as administrative offices for the Department of Athletics and for the Physical Education Department of Boston-Bouvé College.

A recent addition to the Center, the Barletta Natatorium, houses a 105-foot swimming pool, a practice tank for the crew, handball courts, and shower and dressing facilities.

**Dockser Hall**

Charles and Estelle Dockser Hall, completed in 1968, houses a large gymnasium, dance studio, motor performance laboratory, college library, community recreation laboratory, folk arts center, dark and music rooms, recreation resources area, locker rooms, offices, classrooms, conference room and lounge, storage facilities, and a research laboratory.

## **SUBURBAN FACILITIES**

### **Suburban Campus**

The Suburban Campus, located near the junction of Routes 128 and 3 in Burlington, Massachusetts, was established to meet the needs of individuals and of industry in the area.

In addition to graduate courses in engineering, physics, mathematics, business administration, science, education, and the arts, portions of undergraduate programs leading to the associate and bachelor's degrees, special programs for adults and non-credit state-of-the-art programs are offered.

### **Henderson House**

The University's conference center, Henderson House, is located in Weston, Massachusetts. The Center for Continuing Education conducts short-term courses, seminars, and special institutes for business, professional, and research groups. Henderson House is twelve miles from the main campus.

### **Warren Center**

The Warren Center for Physical Education and Recreation in Ashland, Massachusetts, serves as a year-round outdoor laboratory for students in Boston-Bouvé College. There are facilities for conferences, special education in arts and crafts, and sports—including aquatics. Buildings include a lodge, cottages, and an infirmary.

### **Marine Science Institute**

The Marine Science Institute at Nahant, Massachusetts, about 20 miles northeast of Boston, is a research and instruction facility engaged primarily in studies of marine biology and oceanography. The Institute is operated the year around.

# lincoln college administration

## Administrative Officers

William F. King, B.S., M.S., P.E.  
*Director*

Jacob Wiren, B.S., M.S., P.E.  
*Assistant Director*

Hollis S. Baird  
*Assistant to the Director*

Otis F. Cushman, B.S., M.S.  
*Assistant Director*

## Student Counseling Staff

Hollis S. Baird  
*Administrative Coordinator*

|                                 |  |
|---------------------------------|--|
| Robert J. Averill, B.S., M.S.   | Richard E. Sprague, B.S., B.B.A.,<br>M.B.A., Ed.M. |
| Philip W. Dunphy, B.S., M.Ed.   |  |
| Charles F. Field, B.S., M.Ed.   | Jacob Wiren, B.S., M.S., P.E.                      |
| Roderic W. Sommers, B.S., M.Ed. | Kenneth S. Woodward, B.S., M.S.                    |

## Committee on Regulations and Discipline

|                    |                                  |
|--------------------|----------------------------------|
|                    | William F. King, <i>Chairman</i> |
| Hollis S. Baird    | Otis F. Cushman                  |
| Kenneth S. Woodard | Kenneth W. Ballou                |
| Kenneth C. Solano  | President, Adult Student Council |

## Academic Standing Committee

|                 |                                  |
|-----------------|----------------------------------|
|                 | Otis F. Cushman, <i>Chairman</i> |
| Hollis S. Baird | Jacob Wiren                      |
| William F. King | Kenneth S. Woodard               |

## Academic Advisory Council

|                 |                                   |
|-----------------|-----------------------------------|
|                 | William F. King, <i>Chairman</i>  |
|                 | Jacob Wiren, <i>Vice Chairman</i> |
|                 | Hollis S. Baird, <i>Secretary</i> |
| Leroy M. Cahoon | Ernest E. Mills                   |
| Otis F. Cushman | Louis J. Nardone                  |
| Edward M. Cook  | Thomas H. Wallace                 |
| Robert S. Lang  | Kenneth S. Woodward               |

## Curriculum Advisory Committee

William F. King, B.S., M.S., P.E.  
(Academic Administration)  
*Chairman*  
Jacob Wiren, B.S., M.S., P.E.

(continued on following page)

*Vice Chairman*

Otis F. Cushman, B.S., M.S.

*Secretary*

Professor Hollis S. Baird

|   |   |
|---|---|
| Robert J. Averill, B.S., M.S.<br>(Circuit Theory)   | John Kaczorowski, Jr., B.S., M.S.<br>(Electrical Power Engineering Technology)                          |
| Edward Bobroff, B.M.E., P.E. (Mass)<br>(Calculus)   | Gary M. Keighley, B.S.<br>(Flight School)   |
| Eugene G. Branca, S.B., S.M.<br>(Basic Mathematics)   | George F. Kent, B.S., M.S.,<br>P.E. (Mass)<br>(Materials)   |
| Franklyn K. Brown, B.S., Ed.M.<br>(Engineering Design)                                      | Horatio W. Lamson, B.S., M.A.,<br>P.E. (Mass)<br>(Electrical Measurements)                              |
| William O. Bruehl<br>(Mechanical Engineering Laboratory)                                    | Robert S. Lang, B.S., Ed.M.<br>(Graphics and Computation)   |
| Leroy M. Cahoon, B.S. in C.E., M.S.,<br>P.E. (Mass)<br>(Civil Engineering Technology)       | Demetre P. Ligor, B.S.E.E., P.E.<br>(Mass) (Wave Phenomena,<br>Semiconductor Physics & Devices)         |
| John J. Cochrane, B.S., M.S., Ph.D.<br>P.E. (Mass, N.Y., Vt.)<br>(Environmental Technology) | Walter Messcher, B.M.E., M.S.<br>(Computer Programming)   |
| Edward M. Cook, A.B., A.M.<br>(Mathematics)   | Ernest E. Mills, B.S., M.S., P.E.<br>(Mass) (Mechanical Engineering Technology, Day and Evening)        |
| Warren C. Dean, A.B., M.A.<br>(Differential Equations)                                      | Louis J. Nardone, B.S., M.S.,<br>P.E. (Mass)<br>(Electrical Engineering Technology, Day and Evening)    |
| Paul A. Dunkerley, B.S., S.M.,<br>P.E. (Mass)<br>(Fluid Mechanics)                          | Bernard C. Reddy, B.S., Ed.M.<br>(Introductory Physics)   |
| William D. Finan, A.B., M.A.<br>(Introductory Mathematics)                                  | Harold M. Sharaf, B.S., M.S.<br>(Principles of Communication Systems)                                   |
| John L. Freedman, B.S., P.E. (Mass)<br>(Electronics)  | Thomas H. Wallace, B.S., M.A., Ph.D.<br>(Physics)   |
| David Goldberg, B.S., M.S.<br>(Electrical and Electronic Graphics)                          | Willard B. Whittemore, B.S., in C.E.,<br>Ed.M., C.A.G.S.<br>(Algebra and Trigonometry)                  |
| Arthur F. Gustus, B.S., Ed.M.<br>(Physics)  | Albert G. Wilson, Jr., B.S. in C.E.,<br>M.S., P.E. (Mass), S.E. (Illinois)<br>(Statistics and Dynamics) |
| Francis R. Hankard, B.S., M.A.<br>(Physics)   | Kenneth S. Woodard, B.S., M.S.<br>(Aviation Technology)   |
| Joseph J. Hansen, A.B., M.B.A.<br>(Mathematics for Business Management)                     |   |
| George C. Harrison<br>(Pulse Circuits & Elect. Labs.)                                       |   |

*Office Staff*

Rasma Galins, Administrative Secretary

Ann P. Druke, Secretary

Doris S. Tortora, Secretary

Biljana John, Secretary of Records

# the role and scope of lincoln college

## Purpose

Lincoln College is charged with the responsibility for developing and offering college-level courses and curricula of an applied-science or technological nature. Its purpose is to assist professional personnel, qualified to deal with the applications and uses of the biological, natural, and physical sciences, in better meeting community needs. The programs of study conducted by the College have in common the following purposes and characteristics:

1. The programs of instruction prepare the graduate for activities allied to the fields of engineering, science, or medicine, but are more specialized than those required to prepare a person for full professional responsibilities.
2. The programs of instruction are more concise and more completely technological in content than professional curricula, though they are concerned with the same general fields of scientific, engineering, industrial, or clinical specialization.
3. The programs of instruction are based upon principles of science, and include post-secondary-school mathematics to provide the tools to achieve the technological objectives of the curricula.
4. Emphasis is placed upon the use of rational processes in converting theories and ideas into practical techniques, procedures, and products.
5. Extensive training for artisanship or craftsmanship is not included within the scope of the technological education programs.
6. Graduates from the associate degree programs have opportunities for educational work leading to the Bachelor of Engineering Technology and Bachelor of Science degrees.

## **Technology and the Technologist**

Scientific and technological skills range over a broad spectrum, from extremely simple craftsmanlike activity to highly complex and abstract activity. At one end of the spectrum is the professional whose work is mostly theoretical in character. He studies, reasons, and visualizes how new knowledge may be used in the development of solutions to technical problems. Usually he is not completely knowledgeable of the detailed procedures used by the skilled craftsman who executes the ideas, procedures, and designs.

The technologist is the pivot-man on the professional-technologist-craftsman team. He works with the professional engineer, scientist, doctor, supervisor, and craftsman in converting knowledge of scientific theories and practical craftsmanship into products, procedures, and techniques. His responsibilities are technologically important—professional opportunities are limited only by ambition, ability, and education.

When employed in research, design, or development, the technologist usually acts as direct supporting personnel to the professionals. If he functions in a capacity related to production, operation, testing, or control, he usually follows a course prescribed by a professional but may not work closely under his direction. If installation, maintenance, or sales are his areas of responsibility, he is frequently performing a task that would otherwise have to be performed by the professional. He thereby assumes the more routine professional functions demanded by our increasingly scientific and technical society.

In executing his functions, the technologist is required to use a high degree of rational thinking, to employ post-secondary school mathematics and the principles of the biological, natural, and physical sciences. The skilled technologist works with his mind as well as his hands. He considers why, as well as how things work. To perform his functions efficiently, the technologist must effectively communicate technical and scientific information mathematically, graphically, and linguistically.

## **The Need for Technologists**

Our present technological age, with its exploding accumulation of new information and discoveries in the physical, natural, and life sciences, has increased the need for people with specialized training in science and technology. Experts have recently estimated that in order to meet expanding needs, the number of students graduating from the nation's professional schools must double—a goal which is improbable in the near future.



The most reasonable alternative is to make our professional manpower most efficient by providing assistance in the form of specially trained technologists. Manpower experts believe that the present ratio of less than one technologist to each professional should ideally be nearer five to one.

Opportunities for technologists are increasing at a faster rate than for any other occupational group—a 50 percent increase is expected in the next five years. More than 200,000 technologists will be needed each year; schools now graduate only 50,000 per year. The technologist's employment opportunities are varied and much demanded in health and public service organizations; atomic energy and electric power industries; metal fabricating industries; local, state, and federal government agencies; the armed forces; aerospace industries; chemical, petroleum, plastics, and metal industries; as well as transportation and communication industries.

## PROGRAMS OF INSTRUCTION

Recognizing the growing need for technicians and technologists and their expanding role in modern society, Lincoln College offers Pre-Technology Preparatory Courses and degree programs leading to the Associate in Engineering (A.E.); Associate in Science (A.S.); and Bachelor of Engineering Technology (B.E.T.) as follows:

### Pre-Technology

|  |             |
|--|-------------|
| Introductory Mathematics, Basic Mathematics, Physics,<br>and English ..... | pages 68-69 |
| Reading-Improvement Program (non-credit) .....                             | page 70     |
| Programmed Instruction Review Courses (non-credit) .....                   | page 70     |

### Aviation Technology

|  |         |
|--|---------|
| Aviation Technology (A.S. degree)—2 years days ..... | page 72 |
|--|---------|

### Civil Engineering Technology

|   |             |
|---|-------------|
| Architectural Engineering Technology (A.E. degree) .....            | page 75     |
| Environmental Engineering (A.E. degree) .....                       | page 76     |
| Structural Engineering Technology (A.E. degree) .....               | page 77     |
| Surveying and Highway Engineering Technology<br>(A.E. degree) ..... | page 78     |
| Civil Engineering Technology (B.E.T. degree) .....                  | pages 79-80 |

## **Electrical Engineering Technology**

|   |             |
|---|-------------|
| Electrical Power Engineering Technology (A.E. degree) . . . . . | page 82     |
| Electronics Engineering Technology (A.E. degree) . . . . .      | page 83     |
| Electrical Engineering Technology (B.E.T. degree) . . . . .     | pages 84-86 |
| Electrical Engineering Technology (B.E.T. degree) . . . . .     | pages 87-88 |
| (Day Cooperative Curriculum)                                    |             |

## **Mechanical Engineering Technology**

|   |             |
|---|-------------|
| Mechanical Engineering Technology (A.E. degree) . . . . .   | page 90     |
| Heat Engineering Technology (A.E. degree) . . . . .         | page 91     |
| Mechanical Engineering Technology (B.E.T. degree) . . . . . | pages 92-93 |
| Mechanical Engineering Technology (B.E.T. degree) . . . . . | pages 94-95 |
| (Day Cooperative Curriculum)                                |             |

## **Interdisciplinary Science and Engineering Technology Programs**

|  |               |
|--|---------------|
| Chemical-Physical Technology (A.S. degree) . . . . .           | page 97       |
| Mathematical-Physical Technology (A.S. degree) . . . . .       | page 98       |
| Fire Technology (A.S. degree) . . . . .                        | page 99       |
| Bioelectronic Engineering Technology (A.E. degree) . . . . .   | page 100      |
| Computer Engineering Technology (A.E. degree) . . . . .        | page 101      |
| Control Systems Engineering Technology (Certificate) . . . . . | page 102      |
| Environmental Control Technology (B.E.T. degree) . . . . .     | pages 103-104 |
| Mechanical-Structural Engineering (B.E.T. degree) . . . . .    | page 105      |

## **College of Engineering**

### **Part-time Electrical, Civil, and Mechanical Engineering Programs (B.S. degree)**

These programs are designed for fully qualified young men and women who:

1. because of family responsibilities must continue to be gainfully employed full time during the day, but who wish to advance by devoting leisure time to their own professional development;
2. were in the top half of their high school class, but at graduation were financially unable to continue their education at the college level; those who did not enjoy top-half standing may require refresher study;
3. realize that the most effective way to achieve their full potential in these days of specialization is to earn a college degree.

All of the courses in these part-time curricula are identical with those

offered in the five-year, day cooperative programs and are taught by the same faculty.

The University reserves the right to withdraw, modify, or add to the courses offered or to change the order or content of courses in any curriculum.

### Admission Requirements

It is important that applicants for admission to the College of Engineering complete the full sequence of secondary school courses in English, Mathematics, and Science. The following subjects should be included: English (4 years), Physics or Chemistry, Algebra (through quadratics), Plane Geometry, and Trigonometry.

Admission testing requirements may be met in one of three ways:

1. by submitting the results of the College Board Scholastic Aptitude Test previously completed;
2. by writing the College Board Scholastic Aptitude Test during the current year; the Committee on Admissions provides full information about the Scholastic Aptitude Tests;
3. by completing a special battery of tests in the Northeastern University Counseling and Testing Center, Room 302, Ell Student Center.

*If a transfer student is applying for advanced standing he need not complete testing.*

In evaluating the credentials of applicants, the Committee on Admissions takes into account additional study which may have been completed since secondary school and, where relevant, armed forces experience.

### Applying for Admission

Applications for freshman admission and admission with advanced standing may be obtained by writing to the Department of Admissions, 150 Richards Hall, Northeastern University; or they may be secured during an admissions interview.

A personal interview is not required, but all candidates are welcome to make an appointment with an admissions counselor. Interviews may be scheduled from 8:30 a.m. to 4:00 p.m., Monday through Friday, and on Saturday from 9:00 to 11:30 a.m.

The candidate will be notified of the decision of the Committee on

Admissions as soon as all credentials have been received and evaluated.

Candidates who have successfully completed courses at other institutions and who wish to transfer to Northeastern should read the following information concerning special transfer programs.

#### Civil and Electrical Engineering Transfer Programs for Associate Degree Graduates

Students with an Associate degree from an accredited technical institute, community college, or junior college with a 2.5 cumulative average or better ( $c=2.0$ ) may be eligible to enter a special transfer program and complete the civil or electrical engineering degree in five years. Students whose associate degree program did not include a minimum of one year of both calculus and physics will not be eligible for entry at this level.

#### Civil, Electrical, and Mechanical Engineering Transfer Programs for Bachelor of Engineering Technology Graduates

Students with a Bachelor of Engineering Technology degree or its equivalent from an accredited college or university, with a 2.75 cumulative average or better ( $c=2.0$ ), may be eligible to complete one of the specified bachelor of science in engineering programs by taking a *minimum* of 40 quarter hours (10 courses) of work. The courses to be taken are assigned by a departmental advisor and are based whenever possible on the student's previous background. The average requirement has been 12 courses (48 quarter hours) which can be completed in two years. Students who have a Bachelor of Engineering Technology, Bachelor of Science in Engineering Technology, or a Bachelor of Science in Engineering degree that is not professionally accredited may be required to take significantly more courses.

#### All Other Transfers

Students with previous academic experience not covered in the above categories will be placed at an appropriate point in the program they select, based on a course-for-equivalent-course credit evaluation.

Questions concerning these programs may be referred to the Department of Admissions (437-2213), or to the Office of the Dean of the College of Engineering (437-2152).

The final date of application will be Friday of the first week in September for the Fall Quarter.

Admission to the Winter and Spring Quarters is limited to transfer students only.

### The College Year

Each academic year is composed of three twelve-week quarters, beginning late in September and ending about the middle of June. Full details in regard to registration are mailed approximately one month in advance. The programs are offered only at the Boston Campus.

### Tuition

The tuition charge for courses is \$54.00 per quarter hour. Students normally carry from five to nine quarter hours each twelve-week quarter.

### Schedule of Classes

Class will normally meet two evenings each week, and occasionally on Saturday morning. Laboratory classes meet additional evenings.



# admissions information

## ADMISSION

### The Student Body

The student body of Lincoln College is composed of recent high school graduates and mature men and women. Most students are employed in industry, with vocational experience ranging from very little for the recent secondary school graduate, to as much as twenty or thirty years for individuals seeking increased professional responsibility and status. Many technical career categories are represented—industrial, engineering, scientific, and allied-medical—demonstrating that, in our increasingly complex society, the key to personal advancement is education.

### Academic Background

A firm knowledge of the fundamentals of mathematics and science is the foundation upon which successful achievements in the more advanced technological courses are built.

Applicants to Lincoln College are, in many cases, mature adults who, although they have experience in industry or previous education, have been away from formal study for some time and, therefore, have doubts concerning their study habits and their algebra, geometry, and science proficiency. Those who anticipate some difficulty in adjusting to the first-year course requirements are advised to give very serious consideration to enrolling in non-credit courses in introductory mathematics, introductory physics, and/or introductory chemistry. These courses are designed to develop adequate background for the basic courses in the degree programs.

### Program Counseling

Career planning through self-analysis and professional counseling assists students in planning educational programs appropriate to their objectives. Entering students are encouraged to arrange for personal interviews with Lincoln College program counselors for assistance in planning their academic programs. Counselors are available by appointment at the Huntington Avenue Campus, Boston; the Suburban Campus, Burlington; the North High School, Framingham; the Wey-

mouth North High School, Weymouth; the Norwood Junior High School North, Norwood; Norwood Airport, Norwood; and the Lynn English High School, Lynn. Students are encouraged to present records of prior education whenever possible. The effectiveness of the counseling review is greatly enhanced by this information. The University, through its Counseling and Testing Center and its Career Information Center, is also prepared to assist applicants whose educational and vocational goals are more complex or less firmly defined.

### **Application for Admission**

Applications for the programs of study offered in the Lincoln College are accepted for admission to the Fall (September), Winter (January), Spring (March), and Summer (June) Quarters. Applications should be filed as early as possible in advance of the opening of the quarter for which the student desires to register in order that eligibility and status may be established.

Information concerning admission may be obtained either by writing to Lincoln College or by requesting it at the time of visiting the College. The application for admission should be completed in detail and submitted to Lincoln College, Northeastern University, Boston, Massachusetts 02115.

All inquiries relative to the Day Cooperative programs should be referred to the Day College Admissions Office, 150 Richards Hall. (See pages 87-88 and 94-95.)

### **Mathematics Placement Test**

Applicants requesting admission to regular first-year mathematics are required to demonstrate proficiency in introductory or basic mathematics through the Lincoln College Mathematics Placement Test. Students who request enrollment in the non-credit Introductory Mathematics course are not required to take the test. The Mathematics Placement Test will be administered during the registration period for each term of instruction at the Huntington Avenue Campus, Boston, and the Suburban Campus, Burlington. The Mathematics Placement Test will be administered on selected dates at the North High School, Framingham; the Weymouth High School, Weymouth; the Lynn English High School, Lynn; and the Norwood Junior High School North, Norwood. In addition, the test is administered during the summer months. Contact the Lincoln College Office, 219 Hayden Hall, at the Boston Campus (437-2500).

Students who demonstrate satisfactory proficiency in the test will be permitted to register for the first-year courses in the program of their



choice. To enroll in Engineering Physics (11.317) the student may need to take Introductory Physics.

If need for a strengthening of mathematical background is indicated, the applicant will be assigned to the Introductory Mathematics course.

Students enrolling in Introductory Mathematics may fill out their schedule by enrolling in Introductory Physics, Introductory Chemistry, or Engineering Graphics.

In every case the student should carefully consider his combined work and study load and register for only those courses which contribute to the development of a firm knowledge of fundamentals and which enable him to adjust to academic study requirements.

## CLASSIFICATION OF STUDENTS

Applicants who have filed an Application for Admission and who are approved by the Lincoln College Academic Standing Committee are admitted as regular degree candidate students in the program which they have indicated on the application.

### Special Students

Students having specific course needs, who do not desire a degree, may register for the courses if they have the required prerequisites or their equivalent. These students will be enrolled as "special students."

### Matriculation

Degree candidates must file a petition for matriculation when they have completed a minimum of forty quarter-hours of work in Lincoln College, for a review of their academic record and to insure that:

1. The student is entered in the permanent record as a degree candidate in the program of his choice;
2. Advanced standing credit for transfer students is entered in their permanent record.

This review will assure that the student has:

1. Attained a satisfactory quality point average;
2. Presented evidence of completion of an accredited secondary school program by submission of a transcript of record or a high school equivalency certificate;

3. Demonstrated acceptable levels of ability and achievement in 15 units\* of secondary school and/or collegiate work as follows:

|                             |         |
|-----------------------------|---------|
| Verbal Communication        | 4 units |
| Mathematics and Computation | 3 units |
| Science and Technology      | 3 units |
| Other                       | 5 units |

4. The Academic Standing Committee may require a student to take one or more aptitude or interest tests if his credentials or academic record fail to completely satisfy the criteria for probable academic success. These tests will be administered by the University Counseling and Testing Center. A fee is charged for these tests.

## **TRANSFER STUDENTS AND ADVANCED STANDING CREDITS**

Students transferring from community colleges, junior colleges, technical institutes, or other colleges and universities may transfer applicable credits toward the degree requirements of Lincoln College.

Students admitted with transfer or advanced standing credits from another institution must meet the requirements for admission as set forth under the regulations applicable to regular students. Advanced standing in Lincoln College may be obtained by (1) transfer of credits or (2) proficiency examination.

### **Transfer of Credits**

Subject to the approval of the Academic Standing Committee, credits may be awarded for academic work completed in other approved schools, colleges, or universities if the following criteria are met: (a) the content of the course being submitted is equivalent to that of the corresponding course in Lincoln College; (b) the average grade achieved in the course submitted is "C" or higher; and (c) the remoteness of the time of study does not negate its use as a prerequisite for an advanced course.

Applicants desiring advanced standing credit by transfer should indicate this desire at the time of filing the application for admission. The applicant should request the Registrar of the institutions of previous attendance to mail an official transcript to the Lincoln College Office.

### **Proficiency Examinations**

Applicants who do not meet all the criteria for the normal transfer of

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\*A unit represents a year's work in a subject at an approved secondary school, community college, junior college, technical institute, or university.

credits, but who are able to supply evidence of sufficient knowledge of a subject as a result of previous training or experience, may petition the Academic Standing Committee for the privilege of taking a Proficiency Examination. If satisfactory proficiency is indicated by the examination, advanced standing credits may be awarded or a substitute course may be recommended.

### **Readmission**

Former students who seek readmission to continue a program of study after having withdrawn from the College for a period of time, may be required to repeat courses which are prerequisites to advanced work.

## **REGISTRATION**

### **Registration for Courses**

Completion of admission requirements does not constitute official registration for courses. All students must be properly registered before attending classes. Registrations are processed by the Registrar's Office during the official registration periods. Former students should ascertain completion of prerequisite courses before registration. Students may register for full-year sequences of courses during the official registration periods. They are urged to register as early as possible in order to obtain the desired class schedule.

### **Changes in Registration**

Changes in program should be initiated before the opening day of classes during the official registration periods.

### **Official Registration Periods**

Official registration periods are scheduled before the Fall, Winter, Spring, and Summer Quarters during the academic year. Students are urged to register as early as possible during these periods. Dates of registration periods for each quarter are listed in the official 1975-1977 Academic Calendar (see pages 6 and 7).

### **Withdrawal**

Simply ceasing to attend classes or notifying the instructor does not constitute official withdrawal from a course. To withdraw officially from a course, the student must notify the Registrar's Office in writing or complete the appropriate withdrawal form. Properly registered students who do not attend one of the first three sessions in any course will be automatically withdrawn from the class roll.

### **Courses in Other Departments of the University**

Lincoln College students assigned to courses in other departments of the University are charged the tuition rates and other fees effective in the departments in which they are enrolled.

# academic information

## ACADEMIC OPERATIONS

### Campuses and Extensions

All courses are offered at the Huntington Avenue Campus, Boston, with some courses available at the Suburban Campus or Burlington High School, Burlington; and at Masconomet Regional High School, Boxford; North High School, Framingham; Haverhill High School, Haverhill; English High School, Lynn; Milford High School, Milford; North High School, Weymouth; Norwood Junior High School North, Norwood; and for Aviation Technology students at the Norwood Airport, Norwood.

### The Quarter Calendar

The regular school year, from September to June, is divided into three quarters of thirteen weeks each. Twelve weeks are scheduled for instruction and final examinations with one week available for makeup classes or vacation time. A limited program of courses is offered during the Summer Quarter.

### Class Sessions

At the Huntington Avenue Campus, lecture periods consist of one hour and forty-minute sessions beginning at 4:10 p.m., 6:00 p.m., and 7:50 p.m. each weekday and at 9:00 a.m. or 10:50 a.m. on Saturdays. At the Suburban Campus and Burlington High School, Burlington, lecture periods will begin at 4:10 p.m., 6:00 p.m., and 7:50 p.m. At the North High School, Framingham, lecture periods will begin at 6:15 p.m. and 7:55 p.m. At the North High School, Weymouth; Masconomet Regional High School, Boxford; Lynn English High School, Lynn; Haverhill High School, Haverhill; Milford High School, Milford; Norwood Junior High School North, Norwood; and Norwood Airport, Norwood, lecture periods will begin at 6:00 or 7:50 p.m. each evening. Day sessions at Norwood Airport begin at 8:00 a.m. each morning. Design and laboratory courses are of longer duration and may occupy a full evening. All laboratory courses are conducted on the Huntington Avenue Campus.

## **Course Work**

All the usual methods of instruction are employed—lectures, home assignments, class projects, laboratory work, irregularly scheduled quizzes, and formal examinations. In addition, mid-course examinations are scheduled in most courses and a final examination is required at the completion of all courses. Students are responsible for fulfilling all the requirements of a course. In the event of absence, students must make appropriate arrangements for makeup with the instructor. Students must follow the procedures outlined below for makeup of missed mid-term or final examinations.

## **Student Study Areas**

The UNIVERSITY LIBRARY is well equipped with technical literature. A detailed statement about its facilities and hours appears on pages 27-29.

The privilege of obtaining books from the Boston Public Library is extended to students of Lincoln College. Application for this privilege, which involves a fee, should be made directly to the Boston Public Library.

Additional study areas are available in the EII Student Center Building.

## **Attendance**

Students absent from regularly scheduled sessions in any subject, for whatever reason, may seriously jeopardize their academic progress and status. Students are expected to be in attendance at all the sessions scheduled in their courses. Excessive absence may be sufficient cause for the Registrar to remove the subject(s) from the student's schedule.

## **Withdrawal**

Simply ceasing to attend classes or notifying the instructor does not constitute official withdrawal from a course. To withdraw officially from a course, the student must notify the Registrar's Office or complete the appropriate withdrawal form.

The Registrar will withdraw the student from a course who:

1. Does not attend one of the first three classes at the beginning of a twelve-week quarter;
2. Does not attend one of the first two classes at the beginning of a summer term.

## **MAKEUP EXAMINATIONS**

### **Mid-course Examinations**

A student absent from a regularly scheduled mid-course examination or quiz may request permission to take a makeup examination. This is a privilege which may be denied if abused by an excessive number of petitions or for other reasons.

Students applying for makeup examinations must:

1. Request from the instructor permission to take the mid-term examination or quiz;
2. The instructor will forward the examination to the Lincoln College Office for processing.

Makeup mid-term examinations and quizzes will be given on a Saturday at 9:00 a.m. in a designated room at the Huntington Avenue Campus according to the published schedule. Contact the Lincoln College Office, 219 Hayden Hall (Telephone 437-2500).

Any student who does not take the makeup examination as scheduled will forfeit the makeup privilege.

### **Missed Final Examinations**

If a student is absent from a final examination, he will receive a grade of "I" (Incomplete) in the course. He may petition for a makeup final examination at the Registrar's Office, 120 Hayden Hall.

A student does not automatically have the right to make up a missed final examination. Students must petition for this privilege. If the petition is granted, the student must pay a \$5.00 fee for taking the special final examination. Petitions may be obtained from the Registrar's Office or in each off-campus Administration Office. Petitions for missed finals must be filed in accordance with the published schedule. Contact the Lincoln College Office, 219 Hayden Hall (Telephone 437-2500).

Students will be notified by mail when and where to take the missed final examination. All examinations will be administered on the Boston Campus. Those who do not take makeup final examinations as scheduled forfeit the makeup privilege.

## **ACADEMIC STANDARDS**

The student is required to maintain appropriate levels of academic achievement in terms of grades, quality-point average, and the quanti-

tative credit requirements of his program of study to satisfy academic progress criteria and achieve graduation from Lincoln College.

### Grading System

The following system of grading is used. The numerical equivalent for each grade is in parentheses.

|                      |                                     |
|----------------------|-------------------------------------|
| A (4.0)—Outstanding  | L Audit (No Credit)                 |
| B (3.0)—Good         | S —Satisfactory (Pass-Fail grade)   |
| C (2.0)—Satisfactory | U —Unsatisfactory (Pass-Fail grade) |
| D (1.0)—Poor         | X —Incomplete (Pass-Fail grade)     |
| F (0.0)—Failure      | * Grade not received                |
| I (—)—Incomplete     |                                     |

A general average of "D" is unacceptable and will not allow a student to continue in Lincoln College or to receive a degree from Northeastern University. The "F" grade is a definite failure. The standard procedure for clearing failures in courses offered in Lincoln College is to repeat the course. In some instances circumstances may warrant amending the standard procedure. These circumstances are described in the *Student Handbook* for day students. An "I" or "X" (incomplete) grade is used for a temporary grade to show that the student has not completed the course requirements.

### Pass-Fail Courses

Any student who is not on academic probation and who has completed forty quarter hours of academic work may register for one pass/fail course and, thereafter, for one course on a pass/fail basis for each ten quarter hours of successfully completed work. Written permission of the appropriate academic dean must be obtained for each pass/fail course. At no time may a student register for more than one pass/fail course per quarter.

Such courses will be restricted to free electives outside the major field of specialization, so that no part of the specifically prescribed curricula will be affected.

The grades recorded on the basis of the pass/fail system of grading will not figure in the computation of the QPA.

### Auditing Policy

Students are permitted to audit courses upon filing the usual registration forms and paying the regular tuition fees. There is no reduction in fees for auditing. An auditor may participate in class discussion,

complete papers and projects and take tests and examinations for informal evaluation, if desired. However, regardless of the amount or quality of work completed, **no academic credit will be granted at any time for courses audited.**

### **Audit Procedure**

The student's decision to take a course on an audit basis must be communicated in writing to the Registrar prior to the fourth class meeting of the course. No exception to this procedure can be approved without authorization by the Academic Standing Committee of the College.

### **Grade Reports**

Grades are mailed to the student by the Registrar and will not be given out at the office of either the Registrar or Lincoln College. Under no circumstances will grades be given over the telephone.

### **Quality-Point Average**

The quality points earned by the student in a given course are determined on the basis of the letter grade achieved and the number of credit hours carried by the course. The total quality points earned, divided by the total number of credit hours, constitute the quality-point average.

1. When the student has more than one grade in the same course, the most recent grade will be used in the calculation of the quality-point average.
2. A grade of "I" will not be considered in the calculation of the final quality-point average.
3. Although advanced standing credits (ASC) allowed for acceptable work completed at other institutions by transfer students count toward completion of the quantitative credit requirements, neither the credits nor the grades earned in such courses are included in quality-point average computations.
4. In programs made up of combined University College and Lincoln College courses, the cumulative quality-point average will include all work in both colleges.

For example, a student who has registered for seven courses, cleared a failure in one of them and received advanced standing credit (ASC) in another, may calculate his quality-point average as follows:



| Grade Achieved | Numerical Equivalent | Credit Hours | Quality Points      |
|----------------|----------------------|--------------|---------------------|
| A              | 4.0                  | × 4 =        | 16.0                |
| B              | 3.0                  | × 4 =        | 12.0                |
| C              | 2.0                  | × 3 =        | 6.0                 |
| D              | 1.0                  | × 3 =        | 3.0                 |
| F              | 0.0                  | × 2 =        | 0.0                 |
| FB             | 3.0                  | × 2 =        | 6.0                 |
| I              | —                    | × — =        | —                   |
| IC             | 2.0                  | × 2 =        | 4.0                 |
| ASC            | —                    | × — =        | —                   |
|                |                      | Totals       | <u>20      47.0</u> |

$$\text{Quality-Point Average} = \frac{\text{Total Quality Points (47.0)}}{\text{Total Credit Hours (20)}} = 2.350$$

The Registrar's Office will not be able to recalculate or confirm the calculations of quality-point averages for individual students. Each student's record will be brought up to date before his graduation. In the meantime, borderline cases will be checked by the Lincoln College Academic Standing Committee.

### Academic Progress Criteria

It is expected that the student will at all times endeavor to achieve a high record of achievement. The Academic Standing Committee reserves the right to review all students' records and deny readmission to those who fall below a minimum quality level of achievement. This requirement has been established as follows:

In order to be allowed to remain in the College, a student must have achieved a quality-point average of 1.4 at the completion of 24 quarter hours; 1.5 at the end of 48 quarter hours; and 1.6 at the end of 72 quarter hours.

It should be further noted that a student who accumulates the equivalent of six uncleared failures may be considered ineligible to continue his program of study.

### Scholastic Probation

The Academic Standing Committee has the authority to dismiss from the College or place on scholastic probation any student whose scholarship is deficient for the following reasons: low quality-point average, excessive outstanding failures regardless of quality-point average.

A student on scholastic probation should be particularly diligent in his current courses and make every effort to clear his academic defi-

ciencies as soon as possible. Students whose academic record does not improve or whose failures are not properly cleared may not be allowed to register for further courses.

When a student on scholastic probation has cleared all or a substantial part of his outstanding failures he may petition the Academic Standing Committee for removal from the probation list.

### **Disciplinary Probation**

The Academic Standing Committee has the authority to dismiss from the College or place on disciplinary probation any student whom it may deem unworthy because of conduct or character. The Committee may ask any student to withdraw from the College who is obviously out of sympathy with its aims and ideals.

## **GRADUATION REQUIREMENTS**

To receive the degree of Associate in Engineering, Associate in Science, or Bachelor of Engineering Technology, the student must fulfill the following requirements:

1. Must have been formally accepted into "degree candidate" status by the Committee on Admissions;
2. Complete all the courses of his particular curriculum, either by attendance at Lincoln College or by receiving Advanced Standing Credit;
3. Complete associate degree programs in eight years and bachelor's programs in twelve years from the date of entrance into Lincoln College. Extensions of time may be granted by the Academic Standing Committee;
4. Be in attendance for at least a year preceding the date on which he expects to graduate; and he must complete at least one-fourth of his work in Lincoln College;
5. Achieve a quality-point average of at least 1.75 in courses taken in the College to be awarded the Associate in Engineering or Associate in Science degrees, and 1.80 for the Bachelor of Engineering Technology degree;
6. Pay the Graduation Fee of \$25.

*In addition, students:*

7. May not earn two associate degrees or two bachelor's degrees in the same field of academic specialization;

8. Must complete a minimum of thirty quarter hours of additional credits to be awarded more than one associate or bachelor's degree;
9. May not be awarded the associate and bachelor's degree at the same commencement;
10. Must petition for transfer of credits completed at other institutions prior to January 1 of the year in which the degree is to be awarded.

## **ACADEMIC AND PROFESSIONAL AWARDS**

The academic programs offered by Lincoln College and the teaching, counseling, and professional efforts of the faculty and staff are aimed at motivating the student toward the highest possible levels of academic achievement. To encourage scholarly and professional excellence and to recognize quality achievements, the following awards are made at appropriate times during the academic year:

### **Honor List and Dean's List Scholars**

Students maintaining honor grade averages—minimum quality average of 3.000 and no "D" grades—during a quarter while carrying a minimum of six quarter hours credit are recognized as Dean's List Scholars. Students desiring certificates attesting to this honor should request them from the Lincoln College Office.

### **Scholastic Achievement Certificates**

Upon graduation with an associate degree, Scholastic Achievement Certificates will be awarded to those students who have achieved distinctly superior attainment in the academic work as follows:

|                                |                    |
|--------------------------------|--------------------|
| Scholastic Achievement         | 3.000-3.499 Q.P.A. |
| High Scholastic Achievement    | 3.500-3.749 Q.P.A. |
| Highest Scholastic Achievement | 3.750-4.000 Q.P.A. |

In order to be eligible for a Scholastic Achievement Certificate the student must earn a minimum of forty-eight quarter hours of credit in Lincoln College.

### **Graduation with Honor**

Upon graduation, honors will be conferred upon students who have achieved distinctly superior academic achievement in a program leading to the Baccalaureate Degree as follows:

|               |                    |
|---------------|--------------------|
| Honor         | 3.003-3.499 Q.P.A. |
| High Honor    | 3.500-3.749 Q.P.A. |
| Highest Honor | 3.750-4.000 Q.P.A. |

In order to be eligible for Honors the student must earn a minimum of seventy-two quarter hours credit in Lincoln College and receive a vote of approval from the faculty with responsibility for his program.

### **University Awards**

The University Awards are presented annually to seniors pursuing associate degree programs, who have achieved high ranking cumulative academic records. The tuition scholarship awards are accompanied by an appropriate certificate.

### **Lincoln College Faculty Scholarship Award**

The faculty encourages the achievement of scholarship by making monetary awards.

The Faculty Scholarship Fund was established in 1969 by voluntary contributions of the Lincoln College Faculty.

The Scholarship Committee determines the number and size of awards based on available funds.

The basis of the award is determined by need, academic achievement, and personal qualifications. The Scholarship Committee invites applications by announcing the specific requirements of eligibility during the school year.

### **Technology Awards**

The Technology Awards are presented annually to seniors pursuing associate degree programs, who have demonstrated superior academic and professional capabilities in their special career fields. The scholarship awards and appropriate certificates are distributed to outstanding students enrolled in the following program categories:

- Civil Engineering Technology
- Commercial Aviation Technology
- Computer Engineering Technology
- Electrical Engineering Technology
- Mechanical Engineering Technology
- Science Technology
- Fire Technology

### **Class Marshal Award**

The Class Marshal Award is presented annually at the Class Day Banquet for Graduates, to the top ranking senior in a baccalaureate program. The award consists of an appropriate certificate, a selection of books, and the President's Letter of Commendation.

### **Sigma Epsilon Rho Awards**

Sigma Epsilon Rho, the evening colleges' scholastic honor fraternity, annually awards plaques and scholarships for outstanding scholastic achievement to the highest ranking students in University and Lincoln Colleges at the end of their junior year.

### **Sigma Epsilon Rho Honor Society Scholarship Award**

The Sigma Epsilon Rho Honor Society Scholarship Award, established in 1974 by the membership of the Society, is awarded annually to a student of University and/or Lincoln College. Eligible students must have a cumulative Quality Point Average of 3.0 or better after completing 80 percent or more of their required studies.

### **Alumni Award for Professional Promise**

Established in 1947 by the Northeastern University Alumni Association, the Alumni Award for Professional Promise is presented annually at a final senior class meeting in the spring of the year. The award is made to the senior who has demonstrated unusual professional promise through character traits, scholastic achievement, and work performance.

### **E. W. Wiggins Aviation Awards**

The E. W. Wiggins Aviation Awards provide scholarship aid to students enrolled in the Commercial Aviation Technology Program, who, in the judgement of the Northeastern University-Wiggins Airways Advisory Committee, have demonstrated the highest degree of proficiency in flying and related courses during the academic year.

### **Leslie B. Cutler Aviation Awards**

The Leslie B. Cutler Aviation Awards were established by the members of the Aero Club of New England to honor and give recognition to the late Senator Cutler's service and devotion to the interests of aviation in the Massachusetts General Court, national legislative bodies, and her private life. These scholarship awards are made to students in the Commercial Aviation Technology Program who most typify the same interest, devotion, and leadership demonstrated by Senator Cutler during her long and distinguished public career.

# financial information

## TUITION

### Initial Registration Fee

A nonrefundable \$10.00 registration fee, required of all new students, is due and payable upon registration.

### Tuition

Tuition for all part-time evening courses is \$35.00 per quarter hour of credit. Tuition for Day BET students will be based on the current day school rate. Charges for registration and tuition for special courses are at the rate specified for each course. Students are permitted to audit courses; however, there is no reduction in fees for auditing.

Students are not permitted to attend class sessions or take any examination or test until they have paid their tuition fees or have made satisfactory arrangements for payment.

Students will not be advanced in class standing, nor permitted to re-enroll in the University, nor have degrees conferred, until all financial obligations to the University have been met.

No certificate of honorable dismissal will be issued to any student who has not fully met his financial obligations to the University.

Non-credit courses are charged at quarter-hour rates equal to those of credit courses meeting on an equivalent contact-hour schedule.

### Aviation Technology Tuition (Day Program)

|             |                                  |           |
|-------------|----------------------------------|-----------|
| FIRST YEAR  | (All Students)                   |           |
| Quarter 1   | Quarter 2                        | Quarter 3 |
| \$1211      | \$1068                           | \$969     |
| Summer      | (Flight Option)                  |           |
| Quarter 4   | Commercial Flight I, II, III, IV |           |
| \$2000      |                                  |           |
| SECOND YEAR | (Flight Option)                  |           |
| Quarter 5   | Quarter 6                        | Quarter 7 |
| \$986       | \$1061                           | \$1061    |

| SECOND YEAR | (Non-Flight Option) |           |
|-------------|---------------------|-----------|
| Quarter 5   | Quarter 6           | Quarter 7 |
| \$560       | \$560               | \$560     |

**Tuition Deposit**

Applicants accepted for admission to the day program must upon request pay a nonreturnable tuition deposit of \$100 as evidence of their intention to enroll; this will be applied to their first tuition payment.

**Additional Flight Courses**

|                             |        |        |
|-----------------------------|--------|--------|
| Certified Flight Instructor | \$ 537 | \$ 568 |
| Instrument Flight           | \$ 645 | \$ 645 |
| Helicopter Flight           | \$1352 | \$1352 |

*(These rates cannot be guaranteed from academic year to academic year.)*

**Additional Time:** Students requiring additional time beyond the prescribed course limits shall be charged for such time at the regular Wiggins-Northeastern rates.

**Flight Tests:** Flight tests are not included in the regular course curriculum. Charges will be made for the Commercial Flight Test and the Instrument Flight Test on the basis of 1½ hours of aircraft and 1½ hours of ground time at the regular Wiggins-Northeastern rate. The Instructor Flight Test which must be given by a regular FAA Examiner requires 1½ hours of aircraft time only.

Tuition for all courses is charged on a quarter basis and is payable in full at the beginning of each quarter. As a convenience without additional charge, and at the student's request, the Bursar's Office will allow payment in two installments.

**Deferred-Payment Privilege**

Occasionally situations develop, usually beyond the control of the student, which make it difficult to meet payments in the regular manner. Under such circumstances the student is advised to discuss his problem personally with the Bursar's Office where a convenient deferred-payment agreement can be worked out. A service fee of \$2.00 is charged for this privilege.

**Late Payment Fee**

Payments of tuition are due by Saturday of the week in which the bill is dated. If payment, or a deferred-payment agreement is not arranged by that date, a late fee of \$10.00 is charged by the Bursar.

**Refund of Tuition**

The general policy in all schools and colleges of the University with respect to refunds of tuition to students is as follows:

The University provides all instruction on an academic quarter basis for which students pay at the beginning of each quarter. Tuition refunds will be granted through the first four weeks of a quarter only when specified conditions are met. Questions regarding refunds should be discussed with the Bursar.

Tuition refunds will be granted only on the basis of the date appearing on the official withdrawal application when filed with the Registrar in Room 120 Hayden Hall. Non-attendance does not constitute official withdrawal.

Refunds will be granted in accordance with the following schedule:

| Official withdrawal filed within: | Percentage of tuition |
|-----------------------------------|-----------------------|
| 1st week of quarter               | 100%                  |
| 2nd week of quarter               | 75%                   |
| 3rd week of quarter               | 50%                   |
| 4th week of quarter               | 25%                   |

### **Tuition Underwritten by Employers**

An increasing number of companies are underwriting part or all of the cost of tuition of students in their employ. In cases in which payment is made directly by the employer to the University, the student should furnish the Bursar's Office a purchase order covering his registration or a statement from an officer of his company certifying that the company is underwriting the tuition.

### **Student Bursar**

All inquiries about student accounts should be directed to the Student Account Bursar, 437-2270.

### **Veterans' Benefits**

Veterans' benefits depend on course load and increase sharply when a student's program exceeds eight quarter hours per quarter. Questions and applications should be directed to Room 245 Richards Hall.

## **SPECIAL FEES**

### **Student Center Fee**

Students attending the Huntington Avenue Campus, Boston, in the evening in a part-time program of study will be assessed a Student Center Fee of 75¢ per quarter.



### **Health Service Fee**

Students attending the Boston, full-time Day Co-op B.E.T. programs are required to pay a Health Service Fee of \$90.00. The program is available to Aviation Technology Students on an optional basis.

### **Missed Final Examination Fee**

Students absent from the regularly scheduled final examination at the end of a course may petition for a "special final examination." The fee for each examination requested by the student is \$5.00. The fee must be paid when the petition is filed in the University Registrar's Office.

### **Proficiency Examination Fee**

Applicants for admission may petition to be awarded advanced standing on the basis of achievement demonstrated by a "proficiency examination." The fee for each examination requested by the applicant is \$10.00. The fee must be paid when the petition is filed in the Lincoln College Office.

### **Graduation Fee**

The University graduation fee, charged to candidates for the associate or bachelor's degree, is \$25.00 payable on or before May 1 of the year in which the student expects to graduate.

### **Transcript of Record Fee**

Students may request transcripts of their records at the University Registrar's Office. There is no charge for the first transcript. After the initial transcript there is a charge of \$1.00 per copy, payable in advance. If more than one transcript is requested at one time the charge is \$1.00 for the first copy and 50¢ for each additional copy.

## **TEXTBOOKS AND SUPPLIES**

Students purchase their own textbooks and work materials. The cost varies according to the subject for which the student is enrolled. The average cost for a normal program of four subjects generally ranges from \$25.00 to \$50.00. Textbooks for single courses range from \$4.00 to \$15.00.

Students enrolled in Engineering Graphics should be prepared to spend \$10.00 to \$15.00 for drawing supplies and \$10.00 to \$20.00 for a set of drawing instruments in addition to the textbooks.

## **LOAN PROGRAMS**

*Full-time students in Lincoln College who are pursuing the B.E.T. Program should refer to the Undergraduate Catalog for financial aid information.*

### **National Direct Student Loan**

This program is available to students who are carrying at least one-half the normal academic workload, are accepted as degree candidates, and who show evidence of financial need.

The Federal maximum a graduate student may borrow is \$5,000 while pursuing the post-baccalaureate degree.

Repayment and interest on these loans do not begin until nine months after the student ceases to carry at least a half-time academic load at an institution of higher education. The repayment of principal may be extended over a ten-year period with the interest at the rate of three percent per annum. Repayment may be deferred up to a total of three years while a borrower is serving as a Peace Corps or VISTA volunteer.

### **Community Sources**

Students and their families are urged to explore community, industrial, and foundation sources for collegiate financial aid. Parental employers or the appropriate union organization may be a source. In addition, local, civic, political, religious or educational leaders are often aware of aid sources in the immediate community. Some typical sources may include: P.T.A., Kiwanis, Lions, Elks, Knights of Columbus, Masons, Sons of Italy, Rotary, State Rehabilitation, American Legion, etc.

### **University Grants**

Each year Northeastern University grants a substantial number of full and partial tuition grants to students who have demonstrated both above-average scholastic achievement and financial need. All applications for aid are automatically considered for all grants administered by the University. It is not necessary for an applicant to specify the grant in which he is interested.

### **Veterans' Benefits**

Any veteran covered by the Veterans Readjustment Act of 1966, Public Law 89-358, should report to Room 245 Richards Hall to fill out the proper enrollment forms. These forms will be made available during registration periods for all students in the Law Enforcement Programs at special off-campus locations.

Students needing additional information as to eligibility, allowances, or other details are urged to contact their local office of the Veterans Administration as early as possible.

### **Guaranteed Student Loan Program**

Under this program, students who are matriculated degree candidates, enrolled for at least one-half the normal academic work load, may borrow from a participating bank or other financial institution. Terms and conditions vary from state to state, but a student generally may borrow up to \$1,500 a year (the law allows a maximum of \$2,500 per year) depending on financial need. The Federal Government pays the interest while the student is in school if the student is eligible for interest subsidy.

The student must have submitted, through the College Scholarship Service, a Parents' Confidential Statement or, if he has been declared financially independent by the Financial Aid Office, a Students' Confidential Statement. These forms are available in the Financial Aid Office.

Applications for the loan itself are available from local banks or the Education Office of your State government. Additional information and necessary application forms for Massachusetts residents are available from the Financial Aid Office.

### **Martin Luther King, Jr. Scholarship Fund**

Established in 1969 in memory of the late Rev. Martin Luther King, Jr. Awards are made as openings occur, to adults from minority groups who would otherwise be unable to continue their education. Stipends will cover tuition expenses not to exceed six quarter hours in any academic quarter. (excluding Summer Quarter).

### **H. Patricia Taylor Scholarship Fund**

The H. Patricia Taylor Scholarship Fund was established in 1974 by H. Patricia Taylor, a graduate of University College, and her husband, Harry C. Taylor, a graduate of the School of Business. The Scholarship expresses their appreciation for financial assistance made available to Mrs. Taylor while obtaining her degree, and is an attempt to provide similar funds to assist others in realizing their potential through higher education. The income from the Scholarship Fund will be awarded annually to a student enrolled in University College or Lincoln College who demonstrates financial need and academic stability and who meets certain other conditions of eligibility.

**The University does not award financial assistance in any form to non-citizens of the United States.**

# **student activities and alumni information**

## **Evening Student Council**

The Evening Student Council was formed to provide a representative body to promote the welfare of the student body in non-academic areas and to foster extracurricular activities which will enrich University life. It affords participants opportunities to meet and develop close personal relationships with fellow students and administrative staff.

The Evening Student Council provides students with opportunities to develop leadership skills and gives them a chance to discuss matters of professional interest with experts in their chosen field.

The Council is made up of interested students in University and Lincoln College, representatives of part-time interest groups, and those specially certified by the Council because of their demonstrated interest in the overall adult programs of the University.

The E.S.C., a member of the International Association of Evening Student Councils, meets on the first Monday of each month at 8:30 p.m. Students are welcome to visit, observe, and express opinions concerning evening student life.

## **Social and Professional Clubs**

Student activities for part-time students are planned, organized, and operated by the student body with the assistance of the Director of University-Lincoln College Student Activities. The programs are designed to keep pace with the changing needs of adult students and to provide maximum opportunity for student participation. All part-time students in University College and Lincoln College are welcome to participate.

The program is flexible in nature and pioneering in spirit to meet the needs of adult students. The Office of University-Lincoln College Student Activities is particularly interested in developing new clubs which will benefit students professionally and educationally. If students wish to start clubs related to their professions, this office will help them plan and organize on the local and national level. The program is dedicated

to assisting the adult student in the development of his fullest potential. The University-Lincoln College Student Activities Office is located in 102 Churchill Hall.

### **Evening Ski Club**

The Evening Ski Club was established as a special interest club by students in University and Lincoln College to give skiers an opportunity to meet other skiers for the purpose of promoting the sport and its related activities. Events sponsored by the Evening Ski Club include wine and cheese parties held locally and in the various ski areas of Maine, New Hampshire, and Vermont. A summer clambake is also arranged on a local beach, usually in July or August. Meetings are held from October through April on a bi-weekly basis on the main campus. Students interested should contact the Evening Student Activities Office in 102 Churchill Hall.

### **Use of Gymnasium Facilities**

Specific schedules for use of the pool, weight training room, indoor athletic field and track, handball courts, gymnasium, and wrestling room are set up each quarter for use by all part-time students. In order to become eligible, students must obtain a temporary Gymnasium Pass each time they wish to use the Cabot Gymnasium Complex. Passes are available in the Cabot Complex, Monday through Friday from 4:30 p.m. to 9:00 p.m. and on Saturday and Sunday from 1:00 p.m. to 4:00 p.m. All students requesting a pass must present their Student Identification Card, and passes will be issued only on a first-come, first-served basis. Students using the Cabot Gymnasium Complex are required to abide by all the rules of the gym and may be asked to complete a Medical Release Form.

### **Society for the Advancement of Management**

The Society for the Advancement of Management is the recognized national professional organization of managers in industry, commerce, government, and education. It has been dedicated to the advancement of management and managers since 1912, when the original Taylor Society was established. University chapters operate in 190 leading colleges and universities in the United States, Canada, Puerto Rico, and Hawaii.

The Northeastern University chapter is open to all adult students interested in furthering their growth and insight into the practice of the management professional. Meetings, conferences, and seminars are held.

### **Pi Tau Kappa Fraternity**

Pi Tau Kappa is a social fraternity open to all evening students. It is organized to enhance their social welfare and promote closer affiliation with the University.

### **Kappa Tau Phi Sorority**

Kappa Tau Phi Sorority is a social organization open to all evening women students. Its purpose is to promote fellowship among the women students and to form a closer tie with the University. Monthly dinner meetings are held. Two scholarships are awarded annually to scholastically superior women students.

### **Alpha Eta Rho**

#### **International Aviation Fraternity**

The Nu Epsilon Chapter is a social organization open to all Aviation Technology Students. It is organized to actively associate the interested students of aviation with leaders and executives in the industry. This close association, strengthened through the bonds of an international aviation fraternity, establishes opportunities for every member in his relation to aviation and inspires interest and cooperation among those in the profession who are also members of Alpha Eta Rho.

### **Lamplighter Column**

News articles written by interested students in University and Lincoln College may be submitted to the *Northeastern Today* newspaper to be printed under a Lamplighter heading. All news articles should be sent to the Evening Student Activities Office, 102 Churchill Hall at least two weeks prior to publication. Due to space considerations in *Northeastern Today*, some articles may require editing by its professional staff.

### **Alumni Association**

More than 52,000 alumni are members of the all-University Alumni Association, which has as its prime purposes the promotion of the welfare of Northeastern University, the establishment of a mutually beneficial relationship between the University and its alumni, and the perpetuation of fellowship among members of the Association.

The Association headquarters is located in Room 101 Ell. The official records and addresses of alumni are maintained in Room 260, United Realty Building.

Activities of the Association, including the Homecoming Day celebration and the annual presentation of Professional Promise Awards to

outstanding seniors in each of the Colleges, are directed by the Vice President for Alumni Affairs. Alumni officers also attend meetings of undergraduate classes to form a closer relationship between the Association and its future members.

The Alumni Relations Office assists the various class officers in planning class reunions. Each class normally holds a reunion every five years during the month of June. The Vice President for the Alumni Class Council is responsible for coordinating class activities and organizing class functions.

The Vice President for Alumni Clubs works in close association with officers of the more than fifty Regional Alumni Clubs which have been established from coast to coast. All alumni are eligible to become members of these organizations. The alumni clubs meet periodically, often in conjunction with visits from members of the faculty or with athletic events.

For Boston area alumni, monthly luncheon meetings are held in both the downtown and uptown sections of the city.

The Association also sponsors and assists the alumnae organization and the Varsity Club, both of which have their own officers and conduct various programs throughout the year. Through the Varsity Club, the Association presents trophies to the outstanding athlete of the year in each of the six major sports.

The Northeastern University Alumni Association is a member of the American Alumni Council, a professional organization composed of representatives of all major colleges and universities in the United States and Canada.

### **Alumni Relations**

The Alumni Association is providing a uniquely valuable service to both the University and the community by sponsoring admissions conferences for parents of high school students who are interested in attending college. These meetings, held in cooperation with the Northeastern Department of Admissions, have been extremely well attended. Local residents as well as alumni of the University have been invited to these conferences, which help to clarify many of the questions today's parents and young people have concerning application procedures of colleges and universities.

### **Placement Service**

Many requests from employers are received by the College, for men and women of potential ability to fill important positions of responsibility. It is the policy of the College to serve the students whenever

possible by placing them in those positions which promise attractive opportunities for development and advancement. The College, however, cannot guarantee to place its students, but it does endeavor to keep in close touch with those who desire placement service and to assist them in obtaining satisfactory advancements in positions and income. No charge is made for placement service. Those needing this assistance should arrange an appointment with the Director of Placement.

While the College cannot guarantee positions to its graduates, the number of requests usually exceeds the number available in the graduating class of any given year. The policy of the College is to find the best qualified men and women among its graduates for the positions which the College is called upon to fill.

The College, in recommending a graduate for a position, furnishes the prospective employer with the facts as to the graduate's ability, character, attitudes, habits, and other qualifications for the position as revealed by the College records. In the last analysis, however, placement in a position depends largely upon the graduate's ability to sell his services to the prospective employer. Most employers prefer to consider two or more candidates for a position and generally request the College to suggest more than one person. Many manufacturing and commercial firms throughout New England call upon the College to assist them in filling important executive and managerial positions.



# academic programs of instruction

## SCOPE OF PROGRAMMING

Lincoln College and Lincoln College in collaboration with University College, and Wiggins Airways, Inc., conduct educational programs at the undergraduate level in the following areas of technology:

Pre-Technology Preparation  
Aviation Technology  
Science Technology  
Civil Engineering Technology  
Electrical Engineering Technology  
Mechanical Engineering Technology  
Computer Engineering Technology  
Environmental Control Technology  
Fire Technology

### Program Selection

Students should determine that the program they desire is offered in a suitable time period. Most programs are offered in the evening on a part-time basis. However, Aviation Technology is offered on a full-time day basis.

In the fields of Electrical Engineering Technology and Mechanical Engineering Technology, full-time day cooperative programs were established in the fall of 1971. Students may enter as freshmen or transfer with advanced standing by applying to the Office of Admissions, North-eastern University, 150 Richards Hall.

### Degrees and Certificates

Lincoln College conducts education programs on the undergraduate level in various technological areas leading to the following degrees and certificates:

1. Associate in Science degree (A.S.) requiring 96 to 99 quarter hours of credit;

2. Associate in Engineering degree (A.E.) requiring 96 quarter hours of credit;
3. Bachelor of Engineering Technology degree (B.E.T.) requiring 180 quarter hours of credit;
4. Certificates may be earned in specified programs with a minimum of 30 quarter hours of credit;
5. Most courses are available for special students.

### **Opportunities for Associate Degree Graduates**

Graduates of the Engineering or Science Technology Programs in Lincoln College, or other similar colleges and institutions, who have earned the Associate in Engineering or the Associate in Science degrees, may transfer applicable credits toward the degree requirements in the baccalaureate programs in Engineering Technology, Medical Technology, or Industrial Technology.

Those who have maintained a quality-point average of 2.500 or higher in the Associate degree programs may apply for transfer to either of the following College of Engineering curricula: (1) day-college Co-operative Education programs in Civil, Mechanical, Electrical, or Industrial Engineering with credit for up to two years of the five-year program; or (2) the part-time evening programs in Civil, Electrical, or Mechanical Engineering with credit for the first three years of the eight-year programs. Fractional credit may be awarded to students with a quality-point average slightly lower than 2.500.

## **PRE-TECHNOLOGY PREPARATION**

(Non-Credit)

Beginning students who have been away from formal study for some time are frequently concerned about their study habits and their verbal, mathematical, and scientific backgrounds. Applicants who anticipate some problems should give serious consideration to enrolling in the non-credit introductory courses, the Reading Improvement Program, or doing review work through programmed instruction at the Learning Center.

### **Introductory Courses**

These courses are designed to develop background for basic courses in the degree programs and thus increase the probability of successful achievement in advanced technology courses.

**Introductory Mathematics I and II**

A two-quarter review of high school algebra and some plane geometry designed to prepare students for the credit course 10.307 College Algebra and Trigonometry I. These courses are required of students who do not demonstrate sufficient algebra proficiency on the Mathematics Placement Test. (See course description for 10.301 and 10.302, page 135.)

**Introductory Physics I and II**

A two-quarter relatively non-mathematical introduction to the concepts of physics designed to prepare students for the credit courses 11.317 Physics I or 11.304 General Physics I. (See course description for 11.301 and 11.302, page 138.)

**Basic Mathematics I and II**

A two-quarter review of basic algebra designed to prepare students for the credit course 10.327 Mathematics I. These courses are required of students who do not demonstrate sufficient proficiency in algebra on the Mathematics Placement Test. (See course descriptions for 10.330 and 10.331, page 136.)

**English for International Students I, II, III**

A three quarter, non-credit sequence for foreign-speaking students covering introduction to English grammar with emphasis on listening, speaking, and writing; selected readings and exercises to strengthen vocabulary and pronunciation; preparation of written and oral reports, business and social correspondence; and advanced work in written and spoken English preparatory to entering 30.601 Composition and Rhetoric I.

**GENERAL INTEREST COURSES**

The following courses of general interest are offered for students who desire to inquire into the technical fields but may not have the mathematical background to pursue the professional courses. In general, these courses may not be substituted for similar courses in the several technical curricula.

1. Technology of Modern Architecture I, II
2. Man and Materials
3. Electric Devices and Systems I
4. Electric Devices and Systems II

5. Interpretation of Industrial Drawings
6. Foundations of Mathematics I
7. Foundations of Mathematics II
8. Foundations of Mathematics III
9. Man's Physical Environment I
10. Man's Physical Environment II

### **Reading Improvement**

The ability to read well is one of the most important basic tools for the successful completion of a college program. The University's Center for Reading Improvement gives the student an opportunity to develop good reading habits in preparation for the intensive reading assignments of college-level courses. The following core skills are covered: previewing, locating main ideas and related details, using guide words and phrases, identifying structural patterns, outlining and summarizing, note-taking, vocabulary building, skimming and scanning, speed-reading, and critical reading. Further information may be obtained at the Center for Reading Improvement.

### **Programmed Study**

Students may enroll in non-credit, self-study courses to better prepare themselves for college academic work and strengthen their high school background at the University's Learning Center.

Courses which may be useful to students in the Lincoln College programs in technology are: slide rule, trigonometry, effective listening, spelling, algebra, study skills, calculus, and English.

University Learning Center hours:

Monday, Tuesday—8:00 a.m.—8:00 p.m.

Wednesday, Thursday, Friday—8:00 a.m.—5:00 p.m.

Thursday—closed 11:45 a.m.—12:50 p.m.

## **AVIATION TECHNOLOGY PROGRAM**

The Aviation Technology program offered by Lincoln College in co-operation with Wiggins Airways is designed to provide the scientific, technological, and business backgrounds required by the modern commercial pilot or entrepreneur in today's aviation and aerospace world as it operates within the framework of the total ship-rail-motor-aircraft transportation industry.

The tremendous expansion of aviation as an increasingly important sector of the nation's industrial economy has accelerated the demand for appropriately trained and educated personnel for careers related

to the flight, instructional, regulatory, management, and technical aspects of the aviation industry.

Flight opportunities range from pilot or co-pilot in the single- or multi-engine air-taxi and cargo services of the local, fixed-base feeder airlines or private company, to flight engineer, first officer, or captain in the high-speed, multi-jet-engined services of the national and international systems of the major airlines.

The education-training-regulation sector of the aviation industry provides additional career opportunities as flight, ground, or simulator instructors or as flight examiners, training or safety directors, and supervisors in the licensing and regulatory agencies of local, state, or federal government.

Persons knowledgeable in the technology and regulation of aviation, who are also skillful in dealing with people, may pursue challenging and rewarding careers in aviation sales, airport operations, aviation business management, etc.

The Aviation Technology related program presently offered by Lincoln College is a two year full-time day program which leads to an Associate in Science degree.

### **Wiggins Airways**

Wiggins Airways has been in operation since 1929. Their facilities located at Norwood Airport, fifteen miles from the main Northeastern University campus, provide the flight training courses for the Aviation Technology programs offered by Lincoln College. They offer air taxi, rental, maintenance, repair, aircraft service parts, electronics, and helicopter services. Wiggins is the New England distributor for Piper Aircraft.

The airport facilities comprise two 4,000' runways, one with high intensity lights; a Federal Aviation Administration control tower in operation from 8:00 a.m. to 8:00 p.m. every day of the year; "H" facility (navigational aid for radio location); two Unicom frequencies for radio communication; and weather teletype service. Modern, air-conditioned classroom facilities, with visual aids, library, and other study aids are available for academic and ground-related courses.

The aircraft fleet consists of eighteen Piper Cherokee 140's; two Piper Cherokee 180's; one Piper Cherokee 6; plus the following: Piper Twin Engine Aircraft—Comanche, Aztec and Navajos, two Flightmatic Simulators, and a General Aviation Training Simulator. All aircraft are maintained on the premises in a federally certified aircraft repair station which is also Piper factory certified.

**Aviation Technology***Leading to the Degree of Associate in Science  
(Day Program—2 years)*

The Curriculum of the Aviation Technology program is designed to provide in the shortest reasonable time, the required amount of related academic instruction and accumulated flight time to thoroughly prepare the student for certification with the Private and Commercial Ratings by the Federal Aviation Administration. In the two-year program, the student will acquire the scientific, technological, and business background for employment in a variety of positions including: Flight Crew Officers, Airport Management, Fixed Base Operations, Air Transportation, Aviation Sales, F.A.A. positions, etc.

Prerequisites: Satisfactory completion of the Mathematics Placement Test or Introductory Mathematics I and II (10.301 and 10.302), medical certificate—F.A.A. Class I or II, interview with Director of Flight Instruction and Aviation Program Counselor.

**First Year**

|                        |   | Total Yearly Q.H. |
|------------------------|---|-------------------|
| 10.307, 10.308         | Algebra & Trigonometry I, II              | 8                 |
| 96.391, 96.392         | Air Science A & B                         | 6                 |
| 30.603                 | Comp. & Rhet. (Int.)                      | 4                 |
| 93.401                 | Technical Communications                  | 4                 |
| 11.317, 11.318, 11.319 | Physics I, II, III                        | 12                |
| 48.514                 | Elements of Transportation & Distribution | 2                 |
| 96.399                 | Flight Physiology                         | 2                 |
| 96.395                 | Meteorology & Climatology A               | 3                 |
| 48.593                 | Air Transportation A                      | 3                 |
| 96.331, 96.332, 96.333 | Primary Flight I, II, III                 | 4½                |

**Summer Term (Flight Option)**

|                |                         |   |
|----------------|-------------------------|---|
| 96.341, 96.342 | Commercial Flight I, II | 3 |
|----------------|-------------------------|---|

**Second Year (Flight Option)**

|                |                                  |    |
|----------------|----------------------------------|----|
| 96.324, 96.325 | Introductory Avionics; Avionics  | 8  |
| 96.393, 96.394 | Advanced Air Science A, B        | 6  |
| 96.308         | Aircraft Power & Systems         | 4  |
| 96.425         | Chronology of Aviation           | 2  |
| 96.396         | Meteorology & Climatology B      | 3  |
| 48.594         | Air Transportation B             | 3  |
| 96.345         | Commercial Flight V              | 1½ |
| 96.361, 96.362 | Instrument Flight I, II          | 3  |
| 96.376, 96.377 | General Aviation Operations A, B | 6  |
| 41.551, 41.552 | Accounting A, B                  | 6  |

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 Total 97

**Second Year (Non-Flight Options)**

Students electing the Non-flight Option will replace the commercial flight courses with a sequence of air transportation, law enforcement, engineering, or airport management courses. These courses are listed under the description of courses at the end of the catalogue.

Students having definite plans to enter other upper class programs following the completion of the Associate degree should consult their adviser regarding entrance requirements prior to registering for second-year courses.

**Avionics Technology (second-year option)**

The electronics equipment used in today's aircraft is becoming increasingly sophisticated and complex. This increases the need for highly trained avionics technicians to maintain this equipment. The avionics curriculum provides the special knowledge and skills demanded in this area. Graduates from this program are eligible to write the Federal Communications Commission examination for the 2nd Class Radio License.

|                        |   |   |
|------------------------|---|---|
| 96.324, 96.325         | Introductory Avionics; Avionics             | 8 |
| 96.393, 96.394         | Advanced Air Science A, B                   | 6 |
| 96.308                 | Aircraft Power & Systems                    | 4 |
| 96.425                 | Chronology of Aviation                      | 2 |
| 96.396                 | Meteorology & Climatology B                 | 3 |
| 48.594*                | Air Trans B                                 | 2 |
| 96.360                 | Aircraft Analysis                           | 2 |
| 96.376*                | General Aviation Operation A                | 3 |
| 09.307, 09.308, 09.309 | Electrical & Electronic Graphics I, II, III | 6 |
| 96.326, 96.327, 96.328 | Avionics Laboratory I, II, III              | 6 |
| 96.329, 96.330         | Radio Communications I, II                  | 4 |
| 03.387, 03.388         | Integrated Circuits I, II                   | 4 |

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 Total 50

\*Optional

**CIVIL ENGINEERING TECHNOLOGY PROGRAMS**

Civil Engineering deals with the planning and construction of all kinds of relatively permanent structures and public works. Its major functions are: the preparation of surveys (topographical, geological, traffic, utility, etc.); the design of structures (buildings, bridges, dams, harbor facilities, etc.); the planning of municipal systems (water, sanitary, gas, flood control, air pollution control, etc.); and the development of transportation facilities (highway, railway, waterway, airway, etc.).

In performing these functions, the civil engineer will work in close association with professionals in the field, and he may develop technologically to function independently and in positions of managerial responsibility.

Employment opportunities for Civil Engineering Technology Program graduates are with town, city, state, or federal public works departments and agencies; private consulting, engineering, architectural, and construction organizations; and with railroads and the military.

The Civil Engineering Technology program and related programs offered by Lincoln College are:

*Associate in Engineering Degree*

|  |         |
|--|---------|
| Architectural Engineering Technology .....         | page 75 |
| Environmental Engineering Technology .....         | page 76 |
| Structural Engineering Technology .....            | page 77 |
| Surveying and Highway Engineering Technology ..... | page 78 |

*Bachelor of Engineering Technology Degree*

|  |               |
|--|---------------|
| Civil Engineering Technology .....                 | pages 79-80   |
| Mechanical-Structural Engineering Technology ..... | pages 105-106 |
| Environmental Control Technology .....             | pages 103-104 |



**Architectural Engineering Technology***Leading to the Degree of Associate in Engineering*

The program in Architectural Engineering Technology prepares the graduate to assume responsibilities in the planning, design, and construction of buildings. Employment opportunities are with architectural groups, consulting engineering firms, and government agencies.

**Prerequisite:** Satisfactory completion of the Mathematics Placement Test or Introductory Mathematics I and II courses (10.301 and 10.302). The Mathematics Placement Test must be taken prior to registration.

**First Year**

| Course Numbers         | Course                        | Q.H. |
|------------------------|-------------------------------|------|
| 10.307, 10.308         | College Algebra & Trig. I, II | 8    |
| 10.320                 | Calculus I                    | 4    |
| 11.317, 11.318, 11.319 | Physics I, II, III            | 12   |

**Second Year**

|                         |                                 |   |
|-------------------------|---------------------------------|---|
| 01.301, 01.302, 01.303  | Surveying I, II, III            | 6 |
| 02.301, 02.302, 02.303  | Mechanics (Statics) I, II, III  | 6 |
| *09.311, 09.312, 09.313 | Engineering Graphics I, II, III | 6 |
| 10.321, 10.322, 10.323  | Calculus II, III, IV            | 6 |

**Third Year**

|                        |   |   |
|------------------------|---|---|
| 01.321, 01.322, 01.323 | Introduction to Structures I, II, III   | 6 |
| 01.401, 01.402         | Tech. of Modern Architecture I, II      | 4 |
| 01.390                 | Construction Administration             | 2 |
| 02.321, 02.322, 02.323 | Stress Analysis I, II, III              | 6 |
| 09.351, 09.352, 09.353 | Principles of Computer Prog. I, II, III | 6 |

**Fourth Year**

|                        |                                       |   |
|------------------------|---------------------------------------|---|
| 01.324, 01.325, 01.326 | Structural Analysis I, II, III        | 6 |
| 01.331, 01.332, 01.333 | Design of Structures I, II, III       | 6 |
| 01.393, 01.394, 01.395 | Architectural Design I, II, III       | 6 |
| 01.371, 01.372, 01.373 | Reinforced Concrete Design I, II, III | 6 |

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Total A.E. degree 96

**Note:** Associate degree graduates may transfer applicable credits toward the requirements in other Lincoln College programs leading to the Associate in Engineering, Associate in Science, or Bachelor of Engineering Technology degree.

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\*27.541, 542, 543 Drawing I, II, III (*Prereq. none*)—a basic course in developing pencil, pen, and wash techniques; and the study of basic drawing problems using a variety of media —may be used to supplement this program.

**Environmental Engineering Technology***Leading to the Degree of Associate in Engineering*

The program in Environmental Engineering Technology prepares the graduate to assume responsibilities related to the design, construction, operation, and supervision of municipal plants and systems concerned with the storage and distribution of water and also the disposal of sewage and waste in urban areas with due consideration for contamination and pollution. Employment opportunities are with town, city, and state public works departments, private engineering consultants, architects, contractors, and many other engineering organizations.

**Prerequisite:** Satisfactory completion of the Mathematics Placement Test or the Introductory Mathematics I and II courses (10.301 and 10.302). The Mathematics Placement Test must be taken prior to registration.

**First Year**

| Course Number          | Course                               | Q.H. |
|------------------------|--------------------------------------|------|
| 10.307, 10.308         | College Algebra & Trigonometry I, II | 8    |
| 10.320                 | Calculus I                           | 4    |
| 11.317, 11.318, 11.319 | Physics I, II, III                   | 12   |

**Second Year**

|                        |                                 |   |
|------------------------|---------------------------------|---|
| 01.301, 01.302, 01.303 | Surveying I, II, III            | 6 |
| 02.301, 02.302, 02.303 | Mechanics (Statics) I, II, III  | 6 |
| 09.311, 09.312, 09.313 | Engineering Graphics I, II, III | 6 |
| 10.321, 10.322, 10.323 | Calculus II, III, IV            | 6 |

**Third Year**

|                        |   |   |
|------------------------|---|---|
| 01.341, 01.342, 01.343 | Fluid Mechanics I, II, III                    | 6 |
| 02.321, 02.322, 02.323 | Stress Analysis I, II, III                    | 6 |
| 09.351, 09.352, 09.353 | Principles of Computer Programming I, II, III | 6 |
| 12.544, 12.545, 12.546 | †General Chemistry I, II, III                 | 6 |

**Fourth Year**

|                        |  |   |
|------------------------|--|---|
| 01.324, 01.325, 01.326 | Structural Analysis I, II, III           | 6 |
| 01.351, 01.352, 01.353 | Environmental Engineering I, II, III     | 6 |
| 01.361, 01.362, 01.363 | Materials and Soil Mechanics, I, II, III | 6 |
| 01.371, 01.372, 01.373 | Reinforced Concrete Design I, II, III    | 6 |

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Total A.E. degree 96

**Note:** Associate degree graduates may transfer applicable credits toward the requirements in other Lincoln College programs leading to the Associate in Engineering, Associate in Science, or Bachelor of Engineering Technology degree.

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†Students may elect to add 12.547, 12.548, 12.549 Gen. Chem. Laboratory I, II, III (3 q.h.)

**Structural Engineering Technology***Leading to the Degree of Associate in Engineering*

The program in Structural Engineering Technology prepares the graduate to assume responsibilities related to the planning, design, and supervision of the construction of buildings, bridges, foundations; flood-control projects and all fixed structures. Employment opportunities are with consulting engineering firms, architectural groups, contractors, railroads, government agencies, the military, and other design-related companies.

*Prerequisite:* Satisfactory completion of the Mathematics Placement Test or the Introductory Mathematics I and II courses (10.301 and 10.302). The Mathematics Placement Test must be taken prior to registration.

**First Year**

| Course Number          | Course                               | Q.H. |
|------------------------|--------------------------------------|------|
| 10.307, 10.308         | College Algebra & Trigonometry I, II | 8    |
| 10.320                 | Calculus I                           | 4    |
| 11.317, 11.318, 11.319 | Physics I, II, III                   | 12   |

**Second Year**

|                        |                                 |   |
|------------------------|---------------------------------|---|
| 01.301, 01.302, 01.303 | Surveying I, II, III            | 6 |
| 02.301, 02.302, 02.303 | Mechanics (Statics) I, II, III  | 6 |
| 09.311, 09.312, 09.313 | Engineering Graphics I, II, III | 6 |
| 10.321, 10.322, 10.323 | Calculus II, III, IV            | 6 |

**Third Year**

|                        |   |   |
|------------------------|---|---|
| 01.321, 01.322, 01.323 | Introduction to Structures I, II, III         | 6 |
| 01.341, 01.342, 01.343 | Fluid Mechanics I, II, III                    | 6 |
| 02.321, 02.322, 02.323 | Stress Analysis I, II, III                    | 6 |
| 09.351, 09.352, 09.353 | Principles of Computer Programming I, II, III | 6 |

**Fourth Year**

|                        |   |   |
|------------------------|---|---|
| 01.324, 01.325, 01.326 | Structural Analysis I, II, III          | 6 |
| 01.331, 01.332, 01.333 | Design of Structures I, II, III         | 6 |
| 01.361, 01.362, 01.363 | Materials and Soil Mechanics I, II, III | 6 |
| 01.371, 01.372, 01.373 | Reinforced Concrete Design I, II, III   | 6 |

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Total A.E. degree 96

**Note:** Associate degree graduates may transfer applicable credits toward the requirements in other Lincoln College programs leading to the Associate in Engineering, Associate in Science, or Bachelor of Engineering Technology degree.

**Surveying and Highway Engineering Technology***Leading to the Degree of Associate in Engineering*

The program in Surveying and Highway Engineering Technology prepares the graduate to assume responsibilities related to the preparation and calculation of preliminary and legal surveys required for both small projects such as subdivision work, individual lot layouts, and highway layouts, as well as more complex projects relating to sewer systems, pipelines, power transmission lines, dams, reservoirs, and aqueducts. Employment opportunities are with independent surveying companies, civil engineering companies, highway, transit, and railroad planning groups, as well as cartographers, construction companies, and contractors.

*Prerequisite:* Satisfactory completion of the Mathematics Placement Test or the Introductory Mathematics I and II courses (10.301 and 10.302). The Mathematics Placement Test must be taken prior to registration.

**First Year**

| Course Number          | Course                               | Q.H. |
|------------------------|--------------------------------------|------|
| 10.307, 10.308         | College Algebra & Trigonometry I, II | 8    |
| 10.320                 | Calculus I                           | 4    |
| 11.317, 11.318, 11.319 | Physics I, II, III                   | 12   |

**Second Year**

|                        |                                 |   |
|------------------------|---------------------------------|---|
| 01.301, 01.302, 01.303 | Surveying I, II, III            | 6 |
| 02.301, 02.302, 02.303 | Mechanics (Statics) I, II, III  | 6 |
| 09.311, 09.312, 09.313 | Engineering Graphics I, II, III | 6 |
| 10.321, 10.322, 10.323 | Calculus II, III, IV            | 6 |

**Third Year**

|                        |   |   |
|------------------------|---|---|
| 01.304, 01.305, 01.306 | Advanced Surveying I, II, III                 | 6 |
| 01.341, 01.342, 01.343 | Fluid Mechanics I, II, III                    | 6 |
| 02.321, 02.322, 02.323 | Stress Analysis I, II, III                    | 6 |
| 09.351, 09.352, 09.353 | Principles of Computer Programming I, II, III | 6 |

**Fourth Year**

|                        |   |   |
|------------------------|---|---|
| 01.307, 01.308, 01.309 | Legal Aspects of Surveying I, II, III   | 6 |
| 01.311, 01.312, 01.313 | Highway Engineering I, II, III          | 6 |
| 01.361, 01.362, 01.363 | Materials and Soil Mechanics I, II, III | 6 |
| 01.371, 01.372, 01.373 | Reinforced Concrete Design I, II, III   | 6 |

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Total A.E. degree 96

**Note:** Associate degree graduates may transfer applicable credits toward the requirements in other Lincoln College programs leading to the Associate in Engineering, Associate in Science, or Bachelor of Engineering Technology degree.

## Civil Engineering Technology

(Accredited—Engineers' Council for Professional Development)

### *Leading to the Degree of Bachelor of Engineering Technology*

The program in Civil Engineering Technology prepares the graduate to assume broad responsibilities related to surveys required to develop initial design criteria and specifications, and to become involved in the planning, design, and construction of all kinds of relatively permanent structures, municipal plants and systems, or transportation systems and facilities. Employment opportunities are in private consulting firms, construction companies, and public works agencies. Work involving surveying, design, and supervision is open to graduates.

*Prerequisite:* Satisfactory completion of the Mathematics Placement Test or the Introductory Mathematics I and II courses (10.301 and 10.302). The Mathematics Placement Test must be taken prior to registration.

#### First Year

| Course Number          | Course                               | Q.H. |
|------------------------|--------------------------------------|------|
| 10.307, 10.308         | College Algebra & Trigonometry I, II | 8    |
| 10.320                 | Calculus I                           | 4    |
| 11.317, 11.318, 11.319 | Physics I, II, III                   | 12   |

#### Second Year

|                        |                                 |   |
|------------------------|---------------------------------|---|
| 01.301, 01.302, 01.303 | Surveying I, II, III            | 6 |
| 09.311, 09.312, 09.313 | Engineering Graphics I, II, III | 6 |
| 10.321, 10.322, 10.323 | Calculus II, III, IV            | 6 |
| 30.601, 30.602         | Composition and Rhetoric I, II  | 4 |
|                        | English Elective                | 2 |

#### Third Year

|                        |   |   |
|------------------------|---|---|
| 01.304, 01.305, 01.306 | Advanced Surveying I, II, III                 | 6 |
| 02.301, 02.302, 02.303 | Mechanics (Statics), I, II, III               | 6 |
| 09.351, 09.352, 09.353 | Principles of Computer Programming I, II, III | 6 |
|                        | *Laboratory                                   | 6 |

#### Fourth Year

|                        |                                       |   |
|------------------------|---------------------------------------|---|
| 01.341, 01.342, 01.343 | Fluid Mechanics I, II, III            | 6 |
| 01.321, 01.322, 01.323 | Introduction to Structures I, II, III | 6 |
| 02.321, 02.322, 02.323 | Stress Analysis I, II, III            | 6 |
| 23.501, 23.502, 23.503 | Western Civilization I, II, III       | 6 |

#### Fifth Year

|                        |   |   |
|------------------------|---|---|
| 01.324, 01.325, 01.326 | Structural Analysis, I, II, III             | 6 |
| 12.544, 12.545, 12.546 | †General Chemistry I, II, III               | 6 |
| 39.501, 39.502, 39.503 | Economic Principles and Problems I, II, III | 6 |
| 01.331, 01.332, 01.333 | Design of Structures I, II, III             | 6 |

\*Six quarter hours of laboratory work are required; see selection titled "Civil Engineering Laboratories."

†Students may elect to add 12.547, 12.548, 12.549 Gen. Chem. Laboratory I, II, III (3 q.h.)

**Sixth Year**

|                        |   |   |
|------------------------|---|---|
| 01.371, 01.372, 01.373 | Reinforced Concrete Design I, II, III   | 6 |
| 01.361, 01.362, 01.363 | Materials and Soil Mechanics I, II, III | 6 |
| 19.501, 19.502, 19.503 | Psychology I, II, III                   | 6 |
|                        | *Elective I, II, III                    | 6 |

**Seventh Year**

|                        |                                 |   |
|------------------------|---------------------------------|---|
| 01.311, 01.312, 01.313 | Highway Engineering I, II, III  | 6 |
|                        | Elective I, II, III (Technical) | 6 |
|                        | *Elective I, II, III            | 6 |

**Eighth Year**

|                        |                                      |   |
|------------------------|--------------------------------------|---|
| 01.351, 01.352, 01.353 | Environmental Engineering I, II, III | 6 |
| 30.604, 30.605         | Introduction to Literary Forms I, II | 4 |
|                        | English Elective                     | 2 |
|                        | *Elective I, II, III                 | 6 |

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Total B.E.T. degree 180

*Suggested Electives*

|                        |   | Q.H. |
|------------------------|---|------|
| 01.307, 01.308, 01.309 | Legal Aspects of Surveying I, II, III   | 6    |
| 01.327, 01.328, 01.329 | Advanced Structural Analysis I, II, III | 6    |
| 01.334, 01.335, 01.336 | Advanced Structural Design I, II, III   | 6    |
| 01.401, 01.402         | Technology of Modern Architecture I, II | 4    |
| 01.390                 | Construction Administration             | 2    |
| 18.511, 18.512, 18.513 | Biology                                 | 12   |
| 18.521, 18.522, 18.523 | Microbiology                            | 12   |
| **93.402, 93.403       | Technical Communications I, II          | 4    |

*Civil Engineering Laboratories*

|                        |                                       |   |
|------------------------|---------------------------------------|---|
| 01.310                 | Surveying Laboratory                  | 2 |
| 01.364                 | Materials & Soil Mechanics Laboratory | 2 |
| 01.380, 01.381, 01.382 | Environmental Laboratory I, II, III   | 6 |

Elective courses for which proper preparation exists may be chosen from within or outside of the Civil Engineering discipline.

Transfer students may petition for elective credits for courses that are suitable to the curriculum.

Graduates of the Bachelor of Engineering Technology programs desiring to pursue programs leading to the Bachelor of Science in Engineering degree at Northeastern University may apply through the Admissions Office (150 RI). Programs in Electrical, Civil, and Mechanical Engineering are available on a part-time as well as a regular cooperative program. Industrial and Chemical Engineering programs are available only during the regular day programs.

Candidates must have at least 2.75 cumulative average and complete a course program prescribed by the major department and the Dean's Office.

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\*Before registering for any electives, the student should submit a proposed program of elective courses—preferably representing a minor field of concentration consistent with his personal career objectives—for approval by the Academic Standing Committee.

10.324, 10.325, 10.326 Differential Equations I, II, III is recommended for all students planning advanced engineering technology subjects.

\*\*93.402, 403 Technical Communications I, II may be used to fulfill English elective requirements.

## ELECTRICAL ENGINEERING TECHNOLOGY PROGRAMS

Electrical Engineering deals with the design and operation of equipment and systems related to power, communications, data-processing, and electrical control. Its major functions are: 1) the generation, transmission and distribution of electrical energy for light and power purposes; 2) the development and production of equipment for telephone, radio, television, radar, and communication; 3) the design and construction of data-processing systems and analog or digital computers; and 4) the application of electrical and electronic devices in the control of processes and manufacture.

Employment opportunities for the Electrical Engineering Technology graduate are in public and private research laboratories, engineering consulting groups dealing with industrial and plant applications, design organizations dealing with operation and manufacture, sales engineering, and the electric utility industry.

The Electrical Engineering Technology program and related programs offered by Lincoln College are:

### *Associate in Engineering Degree*

|   |          |
|---|----------|
| Bioelectric Engineering Technology .....      | page 100 |
| Electrical Power Engineering Technology ..... | page 82  |
| Computer Engineering Technology .....         | page 101 |
| Electronics Engineering Technology .....      | page 83  |

### *Post-Associate Degree Certificate*

|  |          |
|--|----------|
| Control Systems Engineering Technology ..... | page 102 |
|--|----------|

### *Bachelor of Engineering Technology Degree*

|   |             |
|---|-------------|
| Electrical Engineering Technology .....                         | pages 84-86 |
| (Accredited by Engineers' Council for Professional Development) |             |

The program in Electrical Engineering Technology leading to the Bachelor of Engineering Technology is also offered as a day cooperative program. A specimen curriculum is shown on pages 87-88. For further information please call (617) 437-2200, or write:

Dean of Admissions  
Northeastern University  
360 Huntington Avenue  
Boston, Massachusetts 02115

**Electrical Power Engineering Technology***Leading to the Degree of Associate in Engineering*

The program in Electric Power Engineering Technology prepares the graduate to assume responsibilities related to the design, installation, operation, and maintenance of electrical machinery, power and control apparatus, and larger equipment employing heavy currents. The curriculum includes the study of the generation, transmission, and distribution of electrical energy for light and power, and the application and operation of electrical machinery in industry.

Employment opportunities are in public and investor-owned electrical utilities, electrical manufacturing companies, consulting engineering firms, control equipment design organizations, and communications companies.

*Prerequisite:* Satisfactory completion of the Mathematics Placement Test or the Introductory Mathematics I and II courses (10.301 and 10.302). The Mathematics Placement Test must be taken prior to registration.

**First Year**

| Course Number          | Course                               | Q.H. |
|------------------------|--------------------------------------|------|
| 10.307, 10.308         | College Algebra & Trigonometry I, II | 8    |
| 10.320                 | Calculus I                           | 4    |
| 11.317, 11.318, 11.319 | Physics I, II III                    | 12   |

**Second Year**

|                        |   |   |
|------------------------|---|---|
| 03.301, 03.302, 03.303 | Circuit Theory I, II, III                     | 6 |
| 09.307, 09.308, 09.309 | Electrical and Electronic Graphics I, II, III | 6 |
| 09.351, 09.352, 09.353 | Principles of Computer Programming I, II, III | 6 |
| 10.321, 10.322, 10.323 | Calculus II, III, IV                          | 6 |

**Third Year**

|                        |   |   |
|------------------------|---|---|
| 03.304, 03.305, 03.306 | Circuit Theory IV, V, Electrical Measurements | 6 |
| 03.346, 03.347, 03.348 | Electronics for Industry I, II, III           | 6 |
| 03.331, 03.332, 03.333 | Energy Conversion I, II, III                  | 6 |
|                        | Technical Elective I, II, III                 | 6 |

**Fourth Year**

|                        |                                    |    |
|------------------------|------------------------------------|----|
| 03.334, 03.335, 03.336 | Control Circuits I, II, III        | 6  |
| 03.337, 03.338, 03.339 | Basic Power Systems I, II, III     | 12 |
| 03.341, 03.342, 03.343 | Power and Control Labs. I, II, III | 6  |

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Total A.E. degree 96

*Suggested Technical Electives*

|                        |                               |   |
|------------------------|-------------------------------|---|
| 04.381, 04.382, 04.383 | Nuclear Technology I, II, III | 6 |
| 02.351, 02.352, 02.353 | Thermodynamics I, II, III     | 6 |

**Note:** Associate degree graduates may transfer applicable credits toward the requirements in other Lincoln College programs leading to the Associate in Engineering, Associate in Science, or Bachelor of Engineering Technology degree.



**Electronics Engineering Technology***Leading to the Degree of Associate in Engineering*

The program in Electronic Engineering Technology prepares the graduate to assume responsibilities related to the design, development, and operation of communications, data-processing, and electronic control equipment for applications in computers, military and space explorations, and in automated industrial production equipment. Employment opportunities are in communications equipment, electrical manufacturing, data-processing and control, equipment organizations, as well as other engineering-oriented companies.

**Prerequisite:** Satisfactory completion of the Mathematics Placement Test or the Introductory Mathematics I and II courses (10.301 and 10.302). The Mathematics Placement Test must be taken prior to registration.

**First Year**

| Course Number          | Course                               | Q.H. |
|------------------------|--------------------------------------|------|
| 10.307, 10.308         | College Algebra & Trigonometry I, II | 8    |
| 10.320                 | Calculus I                           | 4    |
| 11.317, 11.318, 11.319 | Physics I, II, III                   | 12   |

**Second Year**

|                        |  |   |
|------------------------|--|---|
| 03.301, 03.302, 03.303 | Circuit Theory I, II, III                                    | 6 |
| 09.307, 09.308, 09.309 | Electrical and Electronic Graphics I, II, III                | 6 |
| 10.321, 10.322, 10.323 | Calculus II, III, IV   | 6 |
| 11.321, 11.322, 11.323 | Wave Phenomena, Semiconductor Physics, Semiconductor Devices | 6 |

**Third Year**

|                        |   |    |
|------------------------|---|----|
| 03.304, 03.306, 03.323 | Circuit Theory IV, Electrical Measurements, Electronic Lab. | 6  |
| 03.311, 03.312, 03.313 | Electronics I, II, III                                      | 12 |
| 09.351, 09.352, 09.353 | Principles of Computer Programming I, II, III               | 6  |

**Fourth Year**

|                         |  |    |
|-------------------------|--|----|
| 03.314, 03.315, 03.316  | Pulse and Digital Circuits I, II, III          | 6  |
| *03.317, 03.318, 03.319 | Principles of Communication Systems I, II, III | 12 |
| 03.327, 03.328, 03.329  | Advanced Electronic Labs. I, II, III           | 6  |

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Total A.E. degree 96

**NOTE:** Associate degree graduates may transfer applicable credits toward the requirements in other Lincoln College programs leading to the Associate in Engineering, Associate in Science, or Bachelor of Engineering Technology degree.

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\*03.387, 03.388, 03.389 Active Integrated Circuits I, II, III

plus

03.381, 03.382, 03.383 Transistor-Circuit Engineering I, II, III

may be substituted for 03.317, 03.318, 03.319 Principles of Communication Systems I, II, III.

**Electrical Engineering Technology**

(Accredited by Engineers' Council for Professional Development)

*Leading to the Degree of Bachelor of Engineering Technology*

The program in Electrical Engineering Technology prepares the graduate to assume broad responsibilities related to the design, development, operation, installation, and production of a wide variety of electrical and electronic equipment concerned with the generation and utilization of electric energy, communications, data-processing, and industrial control. Employment opportunities are in public and private research laboratories, engineering consulting firms dealing with industrial and plant applications, electric utilities, electrical and electronic organizations concerned with operation, manufacture, installation, and sales.

**Prerequisite:** Satisfactory completion of the Mathematics Placement Test or the Introduction Mathematics I and II courses (10:301 and 10:302). The Mathematics Placement Test must be taken prior to registration.

**First Year**

| Course Number          | Course                               | Q.H. |
|------------------------|--------------------------------------|------|
| 10.307, 10.308         | College Algebra & Trigonometry I, II | 8    |
| 10.320                 | Calculus I                           | 4    |
| 11.317, 11.318, 11.319 | Physics I, II, III                   | 12   |

**Second Year**

|                        |   |   |
|------------------------|---|---|
| 03.301, 03.302, 03.303 | Circuit Theory I, II, III                     | 6 |
| 09.307, 09.308, 09.309 | Electrical and Electronic Graphics I, II, III | 6 |
| 10.321, 10.322, 10.323 | Calculus II, III, IV                          | 6 |
| 30.601, 30.602         | *Composition and Rhetoric I, II               | 4 |
|                        | English Elective                              | 2 |

**Third Year**

|                          |  |   |
|--------------------------|--|---|
| 03.304, 03.305**, 03.306 | Circuit Theory IV, V, and Electrical Measurements            | 6 |
| 09.351, 09.352, 09.353   | Principles of Computer Programming I, II, III                | 6 |
| 10.324, 10.325, 10.326   | Differential Equations I, II, III                            | 6 |
| 11.321, 11.322, 11.323   | Wave Phenomena, Semiconductor Physics, Semiconductor Devices | 6 |

**Fourth Year**

|                         |   |    |
|-------------------------|---|----|
| 03.311, 03.312, 03.313  | Electronics I, II, III                        | 12 |
| +03.324, 03.325, 03.323 | Circuits Laboratory I, II and Electronic Lab. | 6  |
| 03.331, 03.332, 03.333  | Energy Conversion I, II, III                  | 6  |

\*30.603 Composition and Rhetoric (Intensive) may be substituted for 30.601, 30.602 Composition and Rhetoric I, II.

\*\*Electronically oriented students may replace 03.305 Circuit Theory V with the technical course provided (see current schedule).

+03.324, 03.325 Circuits Laboratory is required for students having no previous degrees. Transfer students with an Associates degree should take 03.349 Advanced Electronics Lab. IV and 03.350 Advanced Electronics Lab. V.

**Fifth Year**

|                         |  |    |
|-------------------------|--|----|
| †03.317, 03.318, 03.319 | Principles of Communication Systems I, II, III | 12 |
| 03.361, 03.362, 03.363  | Transients in Linear Systems I, II, III        | 6  |
| 23.501, 23.502, 23.503  | Western Civilization I, II, III                | 6  |

**Sixth Year**

|                         |   |   |
|-------------------------|---|---|
| †03.327, 03.328, 03.329 | Advanced Electronic Labs. I, II, III            | 6 |
| 03.371, 03.372, 03.373  | Analog, Digital and Hybrid Computers I, II, III | 6 |
| 39.501, 39.502, 39.503  | Economic Principles and Problems I, II, III     | 6 |
|                         | *Elective I, II, III                            | 6 |

**Seventh Year**

|                        |                            |   |
|------------------------|----------------------------|---|
| 03.377, 03.378, 03.379 | Control Systems I, II, III | 6 |
| 19.501, 19.502, 19.503 | Psychology I, II, III      | 6 |
|                        | *Elective I, II, III       | 6 |

**Eighth Year**

|                |                                      |   |
|----------------|--------------------------------------|---|
| 30.604, 30.605 | Introduction to Literary Forms I, II | 4 |
|                | English Elective                     | 2 |
|                | *Elective I, II, III                 | 6 |
|                | *Elective I, II, III                 | 6 |

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Total B.E.T. degree 180

*Suggested Technical Electives*

|                          |  |      |
|--------------------------|--|------|
|                          |  | Q.H. |
| 03.314, 03.315, 03.316   | Pulse and Digital Circuits I, II, III                      | 6    |
| †03.337, 03.338, 03.339  | Basic Power Systems I, II, III                             | 12   |
| †03.341, 03.342, 03.343  | Power & Control Labs. I, II, III                           | 6    |
| 03.364, 03.365, 03.366   | Advanced Circuit Theory I, II, III                         | 6    |
| 03.367, 03.368, 03.369   | Advanced Pulse & Digital Circuits I, II, III               | 6    |
| 03.374, 03.375, 03.376   | Digital Systems I, II, III                                 | 6    |
| **03.381, 03.382, 03.383 | Linear Active Circuit Design I, II, III                    | 6    |
| 03.384, 03.385, 03.386   | Microwave Semiconductor Devices<br>and Circuits I, II, III | 6    |
| **03.387, 03.388, 03.389 | Integrated Circuits I, II, III                             | 6    |

Continued

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\*Before registering for any electives, the student should submit a proposed program of elective courses—preferably representing a minor field of concentration consistent with his personal career objectives—for approval by the Committee on Education.

10.351, 10.352, 10.353 Advanced Mathematics I, II, III is recommended for all students planning advanced engineering technology subjects.

\*\*03.387, 03.388, 03.389 Integrated Circuits I, II, III  
plus

03.381, 03.382, 03.383 Linear Active Circuit Design I, II, III  
may be substituted for 03.317, 03.318, 03.319 Principles of Communication Systems I, II, III.

†03.337, 03.338, 03.339 Basic Power Systems I, II, III may be substituted for 03.317, 03.318, 03.319 Principles of Communication Systems.

03.341, 03.342, 03.343 Power & Control Labs I, II, III may be substituted for 03.327, 03.328, 03.329 Advanced Electronic Labs. I, II, III.

## 86 / ACADEMIC PROGRAMS OF INSTRUCTION

|                        |  |   |
|------------------------|--|---|
| 09.354, 09.355, 09.356 | Computer Systems I, II, III            | 6 |
| 09.357, 09.358, 09.359 | Computer Aided Design I, II, III       | 6 |
| 09.361, 09.362, 09.363 | Computer Controlled Systems I, II, III | 6 |
| 03.360                 | Introduction to Radar Systems          | 4 |
| 11.324                 | Introductory Survey of Lasers          | 2 |
| 93.402, 93.403         | Technical Communications I, II         | 4 |
|                        | (May be used for English elective)     |   |

Electrical Engineering Technology courses of elective nature may be chosen from the above list of courses.

Elective courses for which proper preparation exists may be chosen from within or outside of the electrical engineering discipline.

Graduates of the Bachelor of Engineering Technology program desiring to pursue programs leading to the Bachelor of Science in Engineering degree at Northeastern University may apply through the Admissions Office (150RI). Programs in Electrical, Civil, and Mechanical Engineering are available on a part-time as well as a regular cooperative program. Industrial and Chemical Engineering programs are available only during the regular day programs.

Candidates must have at least a 2.75 cumulative average and complete a course program prescribed by the major department and the Dean's Office.

**Electrical Engineering Technology**

(Day Cooperative Curriculum)

*Leading to the degree of Bachelor of Engineering Technology***First Year**

| Course Number          | Course  | Q.H. |
|------------------------|---|------|
| 10.307, 10.308         | College Algebra & Trigonometry I, II          | 8    |
| 10.320                 | Calculus I                                    | 4    |
| 11.317, 11.318, 11.319 | Physics I, II, III                            | 12   |
| 30.113                 | Freshman Writing                              | 4    |
| 30.114, 30.115         | Introduction to Lit., Great Themes in Lit.    | 8    |
| 09.421, 09.422, 09.423 | Principles of Computer Programming I, II, III | 6    |
| 09.461, 09.462, 09.463 | Engineering Design Graphics I, II, III        | 6    |
| 11.373, 11.374         | Physics Lab. I, II                            | 4    |

**Second Year**

|                |                             |   |
|----------------|-----------------------------|---|
| 10.421, 10.422 | Calculus A, B               | 8 |
| 03.451, 03.452 | Circuit Analysis I, II      | 8 |
| 11.420         | Physics IV                  | 4 |
| 03.440         | Physical Electronics        | 4 |
| 03.324         | Circuits Lab. I             | 2 |
| ( I ) ( II )   | Liberal Arts Elective I, II | 8 |

**\*Third Year**

|                |                                   |   |
|----------------|-----------------------------------|---|
| 03.460         | Engineering Analysis I            | 4 |
| 03.430         | Energy Conversion                 | 4 |
| 03.453, 03.454 | Circuit Analysis III, IV          | 8 |
| 03.311, 03.312 | Electronics I, II                 | 8 |
| 39.115         | Principles of Economics           | 4 |
| 03.410         | Electrical Measurements           | 4 |
| 03.325, 03.323 | Circuits Lab. II, Electronic Lab. | 4 |

**Fourth Year**

|                |                                     |   |
|----------------|-------------------------------------|---|
| 03.470         | Digital Computers                   | 4 |
| 03.477         | Control Engineering                 | 4 |
| 03.313         | Electronics III                     | 4 |
| 03.327, 03.328 | Advanced Electronic Lab. I, II      | 4 |
| ( I ) ( II )   | **Technical Elective (A or B) I, II | 8 |
| ( II )         | Liberal Arts Elective II            | 4 |

\*Note: Students desiring to terminate their program at the end of Quarter 7 may petition to be awarded the Associate in Engineering degree.

\*\*Technical Elective A: Power Systems Sequence

Technical Elective B: Communication Engineering Sequence (see next page).

**Fifth Year**

| Course Number | Course                            | Q.H. |
|---------------|-----------------------------------|------|
| 03.478        | Control Engineering II            | 4    |
| 03.437        | Distrb. Systems                   | 4    |
| 03.329        | Advanced Electronic Lab. III      | 2    |
| 03.461        | Engineering Analysis II           |      |
|               | or                                |      |
| 02.411        | Mechanics A                       | 4    |
| ( I ) ( II )  | Liberal Arts Electives I, II      | 8    |
| ( I )         | **Technical Elective (A or B) III | 4    |
| ( II )        | Technical Elective                | 4    |

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Total B.E.T. degree 180 Q.H.

**TECHNICAL ELECTIVE SEQUENCES****Power Systems Sequence**

|        |  |   |
|--------|--|---|
| 03.337 | Basic Power Systems I                    | 4 |
| 03.338 | Basic Power Systems II                   | 4 |
| 03.339 | Basic Power Systems III                  | 4 |
|        | Technical Elective (selected from below) | 4 |

**Communication Engineering Sequence**

|        |  |   |
|--------|--|---|
| 03.317 | Principles of Communication Systems I    | 4 |
| 03.318 | Principles of Communication Systems II   | 4 |
| 03.319 | Principles of Communication Systems III  | 4 |
|        | Technical Elective (selected from below) | 4 |

*Suggested Technical Electives*

|        |                                       |   |
|--------|---------------------------------------|---|
| 03.317 | Principles of Communication Systems I | 4 |
| 03.337 | Basic Power Systems I                 | 4 |
| 03.490 | Optical Instrumentation               | 4 |
| 04.481 | Nuclear Technology                    | 4 |

Graduates of the Day Bachelor of Engineering Technology program who have maintained a superior level of achievement and who wish to continue their academic studies may be qualified to enter the part-time or full-time program leading to the Bachelor of Science in Engineering. For further information contact the Lincoln College Office at 219 Hayden Hall, telephone 437-2500.

## MECHANICAL ENGINEERING TECHNOLOGY PROGRAMS

Mechanical Engineering deals with the harnessing of power resources by means of machinery to perform useful work. In contrast to civil engineering, which deals primarily with static forces and structures, mechanical engineering is more concerned with the motion and kinetics of devices which are activated by hydraulic, electrical, mechanical, or thermodynamic forces. Major functions of the mechanical engineer are: 1) design and installation of all kinds of machinery from pocket watches to the largest of steel boring mills; 2) development and production of engines and transportation equipment (automobile, aircraft, ship, railway, etc.); 3) construction and operation of furnaces, boilers, and heating and air-conditioning equipment for the control of atmospheric and environmental conditions.

Employment opportunities for Mechanical Engineering Technology graduates are in the areas of 1) research, design, or development; 2) production, operation, testing, or control; 3) installation, maintenance, and sales. In performing these functions, graduates will work in close association with professionals in the field and may develop technologically so as to function independently and in positions of managerial responsibility.

The Mechanical Engineering Technology program and related programs offered by Lincoln College are:

### *Associate in Engineering Degree*

|   |         |
|---|---------|
| Mechanical Engineering Technology ..... | page 90 |
| Heat Engineering Technology .....       | page 91 |

### *Bachelor of Engineering Technology Degree*

|   |               |
|---|---------------|
| Mechanical Engineering Technology (Accredited by Engineers' Council for Professional Development) ..... | pages 92-93   |
| Mechanical-Structural Engineering Technology .....  | pages 105-106 |
| (Accredited by Engineers' Council for Professional Development)   |               |

The program in Mechanical Engineering Technology leading to the Bachelor of Engineering Technology is also offered as a day cooperative program. A specimen curriculum is shown on pages 94 and 95. For further information please call (617) 437-2200, or write:

Dean of Admissions  
Northeastern University  
360 Huntington Avenue  
Boston, Massachusetts 02115

# Mechanical Engineering Technology

## *Leading to the Degree of Associate in Engineering*

The program in Mechanical Engineering Technology prepares the graduate to assume responsibilities related to the design, production, and installation of mechanical tools, machinery, engines, and transportation equipment in which there is an intermingling of mechanical and hydraulic forces. Because of the increased mechanization of all industry, varied employment opportunities are available in private engineering consultant groups, in light and heavy industries, and in almost all engineering design organizations.

*Prerequisite:* Satisfactory completion of the Mathematics Placement Test or the Introductory Mathematics I and II courses (10.301 and 10.302). The Mathematics Placement Test must be taken prior to registration.

### First Year

| Course Number          | Course                               | Q.H. |
|------------------------|--------------------------------------|------|
| 10.307, 10.308         | College Algebra & Trigonometry I, II | 8    |
| 10.320                 | Calculus I                           | 4    |
| 11.317, 11.318, 11.319 | Physics I, II, III                   | 12   |

### Second Year

|                        |   |   |
|------------------------|---|---|
| 02.301, 02.302, 02.303 | Mechanics (Statics) I, II, III                | 6 |
| 09.311, 09.312, 09.313 | Engineering Graphics I, II, III               | 6 |
| 09.351, 09.352, 09.353 | Principles of Computer Programming I, II, III | 6 |
| 10.321, 10.322, 10.323 | Calculus II, III, IV                          | 6 |

### Third Year

|                         |                                 |   |
|-------------------------|---------------------------------|---|
| 02.304, 02.305, 02.306  | Mechanics (Dynamics) I, II, III | 6 |
| 02.321, 02.322, 02.323  | Stress Analysis I, II, III      | 6 |
| *02.341, 02.342, 02.343 | Materials I, II, III            | 6 |
| 09.314, 09.315, 09.316  | Engineering Design I, II, III   | 6 |

### Fourth Year

|                        |                                       |   |
|------------------------|---------------------------------------|---|
| 01.341, 01.342, 01.343 | Fluid Mechanics I, II, III            | 6 |
| 02.324, 02.325, 02.326 | Advanced Stress Analysis I, II, III   | 6 |
| 02.327, 02.328, 02.329 | Mechanical Design I, II, III          | 6 |
| 02.331, 02.332, 02.333 | Mechanical Technology Lab. I, II, III | 6 |

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Total A.E. degree 96

**Note:** Associate degree graduates may transfer applicable credits toward the requirements in other Lincoln College programs leading to the Associate in Engineering, Associate in Science, or Bachelor of Engineering Technology degree.

\*03.320, 03.321 Electricity and Electronics I, II, III, may be substituted for 02.341, 02.342, 02.343 Materials I, II, III.



**Heat Engineering Technology***Leading to the Degree of Associate in Engineering*

The program in Heat Engineering Technology prepares the graduate to assume responsibilities related to the design, operation, and construction of engines and equipment in which there are thermodynamic, hydraulic, and mechanical forces. Typical examples are automobile, aircraft, and ship engines; boilers and furnaces; and heating, air conditioning, and ventilating devices. Employment opportunities are with architectural firms, engineering consultants, light and heavy mechanical industries, and other engineering and oriented organizations.

*Prerequisite:* Satisfactory completion of the Mathematics Placement Test or the Introductory Mathematics I and II courses (10.301 and 10.302). The Mathematics Placement Test must be taken prior to registration.

**Third Year**

| Course Number          | Course                               | Q.H. |
|------------------------|--------------------------------------|------|
| 10.307, 10.308         | College Algebra & Trigonometry I, II | 8    |
| 10.320                 | Calculus I                           | 4    |
| 11.317, 11.318, 11.319 | Physics I, II, III                   | 12   |

**Second Year**

|                        |   |   |
|------------------------|---|---|
| 02.301, 02.302, 02.303 | Mechanics (Statics) I, II, III                | 6 |
| 09.311, 09.312, 09.313 | Engineering Graphics I, II, III               | 6 |
| 09.351, 09.352, 09.353 | Principles of Computer Programming I, II, III | 6 |
| 10.321, 10.322, 10.323 | Calculus II, III, IV                          | 6 |

**Third Year**

|                        |                                 |   |
|------------------------|---------------------------------|---|
| 02.304, 02.305, 02.306 | Mechanics (Dynamics) I, II, III | 6 |
| 02.321, 02.322, 02.323 | Stress Analysis I, II, III      | 6 |
| 02.351, 02.352, 02.353 | Thermodynamics I, II, III       | 6 |
| 09.314, 09.315, 09.316 | Engineering Design I, II, III   | 6 |

**Fourth Year**

|                        |                                 |   |
|------------------------|---------------------------------|---|
| 01.341, 01.342, 01.343 | Fluid Mechanics I, II, III      | 6 |
| 02.354, 02.355, 02.356 | Heat Transfer I, II, III        | 6 |
| 02.357, 02.358, 02.359 | Heat Engineering I, II, III     | 6 |
| 02.361, 02.362, 02.363 | Heat Technology Lab. I, II, III | 6 |

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Total A.E. Degree 96

**Note:** Associate degree graduates may transfer applicable credits toward the requirements in other Lincoln College programs leading to the Associate in Engineering, Associate in Science, or Bachelor of Engineering Technology degree.

**Mechanical Engineering Technology**

(Accredited by Engineers' Council for Professional Development)

*Leading to the Degree of Bachelor of Engineering Technology*

The program in Mechanical Engineering Technology prepares the graduate to assume broad responsibilities related to the design, development, production, operation, and installation of all kinds of machinery, engines, and transportation equipment as well as boilers, furnaces, and heating or air conditioning equipment which involve interactions of mechanical, hydraulic, and thermodynamic forces. Employment opportunities are in industry producing mechanized and automated equipment, in design and engineering organizations, and in companies dealing primarily with manufacture and production.

*Prerequisite:* Satisfactory completion of the Mathematics Placement Test or the Introductory Mathematics I and II courses (10.301 and 10.302). The Mathematics Placement Test must be taken prior to registration.

**First Year**

| Course Number          | Course                               | Q.H. |
|------------------------|--------------------------------------|------|
| 10.307, 10.308         | College Algebra & Trigonometry I, II | 8    |
| 10.320                 | Calculus I                           | 4    |
| 11.317, 11.318, 11.319 | Physics I, II, III                   | 12   |

**Second Year**

|                        |   |   |
|------------------------|---|---|
| 09.311, 09.312, 09.313 | Engineering Graphics I, II, III               | 6 |
| 09.351, 09.352, 09.353 | Principles of Computer Programming I, II, III | 6 |
| 10.321, 10.322, 10.323 | Calculus II, III, IV                          | 6 |
| 30.601, 30.602         | Composition and Rhetoric I, II                | 4 |
|                        | English Elective                              | 2 |

**Third Year**

|                        |                                |   |
|------------------------|--------------------------------|---|
| 02.301, 02.302, 02.303 | Mechanics (Statics) I, II, III | 6 |
| 02.341, 02.342, 02.343 | Materials I, II, III           | 6 |
| 09.314, 09.315, 09.316 | Engineering Design I, II, III  | 6 |
|                        | *Elective I, II, III           | 6 |

**Fourth Year**

|                        |                                 |   |
|------------------------|---------------------------------|---|
| 01.341, 01.342, 01.343 | Fluid Mechanics I, II, III      | 6 |
| 02.304, 02.305, 02.306 | Mechanics (Dynamics) I, II, III | 6 |
| 02.321, 02.322, 02.323 | Stress Analysis I, II, III      | 6 |
| 23.501, 23.502, 23.503 | Western Civilization I, II, III | 6 |

\*Before registering for any electives, the student should submit a proposed program of elective courses—preferably representing a minor field of concentration consistent with his personal career objectives—for approval by the Academic Standing Committee.

10.324, 10.325, 10.326 Differential Equations I, II, III is recommended for all students planning advanced engineering technology subjects.

**Fifth Year**

|                        |   |   |
|------------------------|---|---|
| 02.324, 02.325, 02.326 | Advanced Stress Analysis I, II, III         | 6 |
| 02.351, 02.352, 02.353 | Thermodynamics I, II, III                   | 6 |
| 04.381, 04.382, 04.383 | Nuclear Technology I, II, III               | 6 |
| 39.501, 39.502, 39.503 | Economic Principles and Problems I, II, III | 6 |

**Sixth Year**

|                        |                              |   |
|------------------------|------------------------------|---|
| 02.327, 02.328, 02.329 | Mechanical Design I, II, III | 6 |
| 02.354, 02.355, 02.356 | Heat Transfer I, II, III     | 6 |
| 19.501, 19.502, 19.503 | Psychology I, II, III        | 6 |
|                        | **Elective I, II, III        | 6 |

**Seventh Year**

|                        |  |   |
|------------------------|--|---|
| 02.331, 02.332, 02.333 | Mechanical Technology Labs. I, II, III | 6 |
| 02.357, 02.358, 02.359 | Heat Engineering I, II, III            | 6 |
|                        | **Elective I, II, III                  | 6 |

**Eighth Year**

|                        |                                      |   |
|------------------------|--------------------------------------|---|
| 02.361, 02.362, 02.363 | Heat Technology Labs. I, II, III     | 6 |
| 30.604, 30.605         | Introduction to Literary Forms I, II | 4 |
|                        | English Elective                     | 2 |
|                        | **Elective I, II, III                | 6 |

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Total B.E.T. degree 180

*Suggested Technical Electives*

Q.H.

|                        |   |   |
|------------------------|---|---|
| 02.337, 02.338, 02.339 | Mechanical Vibrations I, II, III        | 6 |
| 03.320, 03.321, 03.322 | Electricity and Electronics I, II, III  | 6 |
| 02.334, 02.335, 02.336 | Experimental Stress Analysis I, II, III | 6 |
| 02.344, 02.345, 02.346 | Applied Metallurgy I, II, III           | 6 |
| 02.347                 | Principles of Aerodynamics              | 4 |
| †93.402, 93.403        | Technical Communications I, II          | 4 |

Transfer students may petition for elective credits for courses that are suitable to the curriculum.

Graduates of the Bachelor of Engineering Technology program desiring to pursue programs leading to the Bachelor of Science in Engineering degree at Northeastern University may apply through the Admissions Office (150 RI). Programs in Electrical and Civil Engineering are available on a part-time as well as a regular cooperative program. Industrial, Chemical, and Chemical Engineering programs are available only during the regular day programs.

Candidates must have at least a 2.75 cumulative average and complete a course program prescribed by the major department and the Dean's Office.

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\*\*Elective courses for which proper preparation exists may be chosen from within or outside of the Mechanical Engineering discipline.

†93.402, 93.403 Technical Communications I, II may be used to fulfill English elective requirements.

**Mechanical Engineering Technology**

(Day Cooperative Curriculum)

*Leading to the Degree of Bachelor of Engineering Technology***First Year**

| Course Number          | Course  | Q.H. |
|------------------------|---|------|
| 10.307, 10.308         | College Algebra & Trigonometry I, II          | 8    |
| 10.320                 | Calculus I                                    | 4    |
| 11.317, 11.318, 11.319 | Physics I, II, III                            | 12   |
| 30.113                 | Freshman Writing                              | 4    |
| 30.114, 30.115         | Introduction to Lit., Great Themes in Lit.    | 8    |
| 09.421, 09.422, 09.423 | Principles of Computer Programming I, II, III | 6    |
| 09.461, 09.462, 09.463 | Engineering Design Graphics I, II, III        | 6    |
| 11.373, 11.374         | Physics Labs. I, II                           | 4    |

**Second Year**

|                |   |   |
|----------------|---|---|
| 10.421, 10.422 | Calculus A, B   | 8 |
| 02.411, 02.412 | Mechanics A, B  | 8 |
| 09.464         | Engineering Design Graphics IV                                      | 4 |
| 02.414         | Stress Analysis A   | 4 |
| 02.431         | Materials A   | 4 |
| 02.461         | Machine Shop (or Liberal Arts elective on petition with experience) | 4 |

**\*Third Year**

|                |                             |   |
|----------------|-----------------------------|---|
| 02.413         | Mechanics C                 | 4 |
| 03.420         | Electricity & Electronics I | 4 |
| 02.415         | Stress Analysis B           | 4 |
| 02.465         | Heat Lab. I                 | 2 |
| 02.462         | Mechanical Lab. I           | 2 |
| 02.421, 02.422 | Thermodynamics A, B         | 8 |
| 39.115         | Principles of Economics     | 4 |
| 02.441         | Fluid Mechanics A           | 4 |

**Fourth Year**

|                |  |     |
|----------------|--|-----|
| 02.417, 02.418 | Mechanical Design A, B                         | 4&2 |
| 02.463, 02.464 | Mechanical Labs. II, III                       | 4   |
| 02.442         | Fluid Mechanics B                              | 2   |
| 02.423         | Thermodynamics C                               | 4   |
| ( I ) ( II )   | Technical Elective I, II                       | 8   |
| ( I )          | BA Elective or Industrial Engineering Elect. I | 4   |
| ( II )         | Liberal Arts Elective II                       | 4   |

\*Note: Students desiring to terminate their program at the end of Quarter 7 may petition to be awarded the Associate in Engineering degree.

**Fifth Year**

| Course Number       | Course                      | Q.H. |
|---------------------|-----------------------------|------|
| 04.481              | Nuclear Technology          | 4    |
| 02.467              | Project Lab.                | 4    |
| 02.466              | Heat Lab. II                | 2    |
| ( II )              | Technical Elective II       | 4    |
| 02.424              | Thermodynamics D            | 2    |
| ( I ) ( II )        | Technical Elective I, II    | 8    |
| ( I ) ( II )        | Liberal Arts Elective I, II | 8    |
| Total B.E.T. degree |                             | 180  |

*Technical Electives Must Be Chosen From the Following List*

|        |                         |   |
|--------|-------------------------|---|
| 02.416 | Stress Analysis C       | 4 |
| 02.452 | Exp. Stress Analysis    | 4 |
| 02.451 | Mech. Vibrations        | 4 |
| 02.432 | Materials B             | 4 |
| 02.433 | Applied Metallurgy      | 4 |
| 02.425 | Thermodynamics E        | 4 |
| 10.423 | Differential Equations  | 4 |
| 03.421 | Elect. & Electronics II | 4 |
| 03.490 | Optical Instrumentation | 4 |

Graduates of the Day Bachelor of Engineering Technology program who have maintained a superior level of achievement and who wish to continue their academic studies may be qualified to enter the part-time or full-time program leading to the Bachelor of Science in Engineering. For further information contact the Lincoln College Office at 219 Hayden Hall, telephone 437-2500.

**INTERDISCIPLINARY ENGINEERING AND  
SCIENCE TECHNOLOGY PROGRAMS**

These programs offered by Lincoln College present a variety of interdisciplinary combinations of the Engineering Technology Programs and the Science Programs (chemistry, physics, and mathematics). They have been developed to meet the need for technologists in the areas of ecology, bioelectronic devices, computer systems, and other technological applications requiring an expertise in several of the academic disciplines.

This demand for multi-skilled technologists reflects the increased reliance of society on the science and engineering technologist to help solve its growth problems. Opportunities are also developing in highly interdisciplinary fields such as ocean engineering, bioengineering, environmental science, and public health.

The programs are designed to prepare the student to meet the charge of interfacing technology and society. The engineering technology student not only learns about the disciplines that are related to his expertise but he also becomes oriented in the disciplines to which his technological skills will be applied. A program of concentrated study in chemistry and physics or mathematics and physics is offered to the science technology student.

Lincoln College also offers an Associate in Science Degree Program in Fire Technology which provides a broad spectrum of those science technologies which are basic in coping with fire-fighting problems attendant to the complexities of today's society.

Interdisciplinary Engineering and Science Technology programs offered to Lincoln College students are:

*Associate in Science Degree*

|  |         |
|--|---------|
| Chemical-Physical Technology .....     | page 97 |
| Mathematical-Physical Technology ..... | page 98 |
| Fire Technology .....                  | page 99 |

*Associate in Engineering Degree*

|  |          |
|--|----------|
| Bioelectronic Engineering Technology ..... | page 100 |
| Computer Engineering Technology .....      | page 101 |

*Post-Associate Degree Certificate*

|   |          |
|---|----------|
| Control Systems Engineering Technology .. | page 102 |
|---|----------|

*Bachelor of Engineering Technology Degree*

|  |               |
|--|---------------|
| Environmental Control Technology .....             | pages 103-104 |
| Mechanical-Structural Engineering Technology ..... | pages 105-106 |

**Chemical-Physical Technology***Leading to the Degree of Associate in Science*

The program in Chemical-Physical Technology prepares the graduate to assume responsibilities related to the analysis, synthesis, and production of products involving chemical as well as physical changes. The curriculum provides both theoretical and laboratory training in the traditional branches of chemistry, and also includes modern instrumental, radiochemistry, and nuclear technology. It provides broad rather than specialized training so as to have applicability in many chemistry-related fields. Employment opportunities are in manufacturing and pharmaceutical plants producing drugs, oils, synthetics, and plastics, and in private and industrial research laboratories concerned with the development of processes, by-products, and new knowledge.

*Prerequisite:* Satisfactory completion of the Mathematics Placement Test or the Introductory Mathematics I and II courses (10.301 and 10.302). The Mathematics Placement Test must be taken prior to registration.

**First Year**

| Course Number          | Course                               | Q.H. |
|------------------------|--------------------------------------|------|
| 10.307, 10.308         | College Algebra & Trigonometry I, II | 8    |
| 10.320                 | Calculus I                           | 4    |
| 11.304, 11.305, 11.306 | General Physics I, II, III           | 6    |
| 12.544, 12.545, 12.546 | General Chemistry I, II, III         | 6    |
| 12.547, 12.548, 12.549 | General Chemistry Labs. I, II, III   | 3    |

**Second Year**

|                        |                                       |   |
|------------------------|---------------------------------------|---|
| 10.321, 10.322, 10.323 | Calculus II, III, IV                  | 6 |
| 12.521, 12.522, 12.523 | Analytical Chemistry I, II, III       | 6 |
| 12.524, 12.525, 12.526 | Analytical Chemistry Labs. I, II, III | 6 |
| 30.601, 30.602         | Composition and Rhetoric I, II        | 4 |
|                        | English Elective                      | 2 |

**Third Year**

|                        |   |   |
|------------------------|---|---|
| 12.531, 12.532, 12.533 | Organic Chemistry I, II, III                  | 6 |
| 12.534, 12.535, 12.536 | Organic Chemistry Labs. I, II, III            | 6 |
| 11.331, 11.332, 11.333 | Modern Physics I, II, III                     | 6 |
| 09.351, 09.352, 09.353 | Principles of Computer Programming I, II, III | 6 |

**Fourth Year**

|                        |                                 |   |
|------------------------|---------------------------------|---|
| 12.541, 12.542, 12.543 | Physical Chemistry I, II, III   | 6 |
| 12.551, 12.552, 12.553 | Instrumental and Radiochemistry | 6 |
| 04.381, 04.382, 04.383 | Nuclear Technology I, II, III   | 6 |
|                        | Elective I, II, III             | 6 |

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Total A.S. degree 99

**Note:** Associate degree graduates may transfer applicable credits toward the requirements in other Lincoln College programs leading to the Associate in Engineering, Associate in Science, or Bachelor of Engineering Technology degree.

**Mathematical-Physical Technology***Leading to the Degree of Associate in Science*

The program in Mathematical-Physical Technology is designed to establish a firm background in the concepts of physics and mathematics with sufficient chemistry to allow effective communication between technologist and professional. The intensity of courses introduces theoretical depth for concept development but places emphasis at the level of application and performance.

Graduates may serve as high-level technicians and laboratory assistants in such fields as environmental and space science. Working with the professional engineer or scientist, he may assist in performing intricate and detailed experiments; collect, organize, and reduce technical data to manageable form for analysis; or perform investigations requiring mathematical and scientific backgrounds. Opportunities exist in the wide spectrum of research and development organizations which deal in the physical, mathematical, and engineering sciences.

*Prerequisite:* Satisfactory completion of the Mathematics Placement Test or the Introductory Mathematics I and II courses (10.301 and 10.302). The Mathematics Placement Test must be taken prior to registration.

**First Year**

| Course Number          | Course                               | Q.H. |
|------------------------|--------------------------------------|------|
| 10.307, 10.308         | College Algebra & Trigonometry I, II | 8    |
| 10.320                 | Calculus I                           | 4    |
| 11.317, 11.318, 11.319 | Physics I, II, III                   | 12   |

**Second Year**

|                        |   |   |
|------------------------|---|---|
| 10.321, 10.322, 10.323 | Calculus II, III, IV  | 6 |
| 11.321, 11.322, 11.323 | Wave Phenomena, Semiconductor Physics,<br>Semiconductor Devices | 6 |
| 12.544, 12.545, 12.546 | General Chemistry I, II, III                                    | 6 |
| 12.547, 12.548, 12.549 | General Chemistry Labs. I, II, III                              | 3 |
| 30.661, 30.602         | Composition & Rhetoric I, II                                    | 4 |
|                        | English Elective  | 2 |

**Third Year**

|                        |   |   |
|------------------------|---|---|
| 09.351, 09.352, 09.353 | Principles of Computer Programming I, II, III | 6 |
| 10.324, 10.325, 10.326 | Differential Equations I, II, III             | 6 |
| 03.307, 03.308, 03.309 | Electricity & Electronics I, II, III          | 6 |
|                        | Technical Elective I, II, III                 | 6 |

**Fourth Year**

|                        |  |   |
|------------------------|--|---|
| 10.351, 10.352, 10.353 | Advanced Mathematics I, II, III            | 6 |
| 11.331, 11.332, 11.333 | Modern Physics I, II, III                  | 6 |
| 11.373, 11.374, 03.323 | Physics Laboratory I, II, Electronics Lab. | 6 |
|                        | Elective I, II, III                        | 6 |

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Total A.S. degree 99

**Note:** Associate degree graduates may transfer applicable credits toward the requirements in other Lincoln College programs leading to the Associate in Engineering, Associate in Science, or Bachelor of Engineering Technology degree.



**Fire Technology***Leading to the Degree of Associate in Science*

The program in Fire Technology is designed to prepare students to assume responsibilities in such areas as fire investigation, industrial fire prevention and protection, and residential fire safety and prevention. A broad array of engineering technologies is an integral part of the student's program as a preparation for coping with new building techniques, present-day industrial operations, and the related complexities of the fire services.

The curriculum includes 72 quarter hours of credit in science and mathematics including physics, chemistry, and basic engineering courses. The balance of 24 quarter hours is made up of professional courses taught by specialists in this field, bringing to the program a real insight into fire science technology.

*Prerequisite:* Satisfactory completion of the Mathematics Placement Test or Basic Mathematics I and II courses (10.330 and 10.331). The Mathematics Placement Test must be taken prior to registration.

**First Year**

| Course Number          | Course                        | Q.H. |
|------------------------|-------------------------------|------|
| 10.327, 10.328, 10.329 | Mathematics I, II, III        | 6    |
| 11.304, 11.305, 11.306 | General Physics I, II, III    | 6    |
| 91.301, 91.302         | Fire Protection Science I, II | 4    |
| 91.303                 | Chemical Behavior of Fire     | 2    |
| 12.507, 12.508, 12.509 | Modern Chemistry I, II, III   | 6    |

**Second Year**

|                        |                                |   |
|------------------------|--------------------------------|---|
| 02.301, 02.302, 02.303 | Mechanics (Statics) I, II, III | 6 |
| 10.320, 10.321, 10.322 | Calculus I, II, III            | 8 |
| 02.321, 02.322, 02.323 | Stress Analysis I, II, III     | 6 |
| 91.304, 91.305         | Fire Prevention I, II          | 4 |

**Third Year**

|                        |   |   |
|------------------------|---|---|
| 01.341, 01.342, 01.343 | Fluid Mechanics I, II, III                                    | 6 |
| 02.321, 02.322, 02.323 | Stress Analysis I, II, III                                    | 6 |
| 02.351                 | Thermodynamics I  | 2 |
| 03.344                 | Fundamentals of Electricity and<br>Residential Power Circuits | 2 |
| 03.345                 | Industrial Power Circuits                                     | 2 |
| 91.306                 | Fire Apparatus Function and Design                            | 2 |
| 91.307, 91.308         | Fire Protection Systems I, II                                 | 4 |

**Fourth Year**

|                        |                                       |   |
|------------------------|---------------------------------------|---|
| 01.351                 | Environmental Engineering             | 2 |
| 09.311, 09.312         | Engineering Graphics I, II            | 4 |
| 04.381, 04.382         | Nuclear Technology I, II              | 4 |
| 91.312                 | Environmental Physiology              | 2 |
| 45.570, 45.571, 45.572 | Electronic Data Processing I, II, III | 6 |
| 91.309, 91.310, 91.311 | Fire Operations I, II, III            | 6 |

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Total A.S. degree 96

**Note:** Associate degree graduates may transfer applicable credits toward the requirements in other Lincoln College programs leading to the Associate in Engineering, Associate in Science, or Bachelor of Engineering Technology degree.

**Bioelectronic Engineering Technology***Leading to the Degree of Associate in Engineering*

The program in Bioelectronics Engineering Technology prepares the graduate to assume responsibilities related to the design, installation, and operation of modern medical electronic devices used in the measurement, recording, and analysis of anatomical, physiological, and biochemical functions in humans and animals. The curriculum builds heavily on electronics theory, chemistry, and human physiology with emphasis on typical bioelectronic devices and their laboratory applications. Employment opportunities are in biological, chemical, physiological, and pharmaceutical research laboratories; in clinics and hospitals in relation to medical diagnosis and patient care; and in industrial organizations concerned with the design, development, and production of the equipment.

**Prerequisite:** Satisfactory completion of the Mathematics Placement Test or the Introductory Mathematics I and II courses (10.301 and 10.302). The Mathematics Placement Test must be taken prior to registration.

**First Year**

| Course Number          | Course                                 | Q.H. |
|------------------------|--|------|
| 10.307, 10.308         | College Algebra and Trigonometry I, II | 8    |
| 10.320                 | Calculus I                             | 4    |
| 11.317, 11.318, 11.319 | Physics I, II, III                     | 12   |

**Second Year**

|                        |   |   |
|------------------------|---|---|
| 03.301, 03.302, 03.303 | Circuit Theory I, II, III                     | 6 |
| 09.307, 09.308, 09.309 | Electrical and Electronic Graphics I, II, III | 6 |
| 10.321, 10.322, 10.323 | Calculus II, III, IV                          | 6 |
| 12.507, 12.508, 12.509 | *Modern Chemistry I, II, III                  | 6 |

**Third Year**

|                        |   |   |
|------------------------|---|---|
| 03.304, 03.306, 03.323 | Circuit Theory IV, Electrical Measurements, and Electronic Lab. | 6 |
| 11.320                 | Semiconductor Physics and Devices                               | 4 |
| 03.311, 03.312         | Electronics I, II   | 8 |
| 18.507, 18.508, 18.509 | Gross Anatomy and General Physiology I, II, III                 | 6 |

**Fourth Year**

|                        |   |   |
|------------------------|---|---|
| 03.351, 03.352, 03.353 | Bioelectronic Devices I, II, III              | 6 |
| 03.357, 03.358, 03.359 | Bioelectronic Labs. I, II, III                | 6 |
| 09.351, 09.352, 09.353 | Principles of Computer Programming I, II, III | 6 |
|                        | Technical Elective                            | 6 |

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Total A.E. degree 96

**Note:** Associate degree graduates may transfer applicable credits toward the requirements in other Lincoln College programs leading to the Associate in Engineering, Associate in Science, or Bachelor of Engineering Technology degree.

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\*Student may elect to substitute 12.544, 12.545, 12.546 General Chemistry and 12.547, 12.548, 12.549 General Chemistry Laboratory I, II, III (9 q.h.)

**Computer Engineering Technology***Leading to the degree of Associate in Engineering*

The Computer Engineering Technology program is organized to provide the mathematical and technological background for understanding both the hardware and software aspects of computer systems. Graduates will be prepared as:

- programmers who translate engineering or scientific concepts into meaningful form for the computer;
- engineering technicians concerned with the development, specification, production, and operation of computer hardware; and
- applications technicians dealing with the interface of the computer with industrial process and control systems or data acquisition, reduction, and display systems.

**Prerequisite:** Satisfactory completion of the Mathematics Placement Test or the Introductory Mathematics I and II courses (10.301 and 10.302). The Mathematics Placement Test must be taken prior to registration.

**First Year**

| Course Number          | Course                               | Q.H. |
|------------------------|--------------------------------------|------|
| 10.307, 10.308         | College Algebra & Trigonometry I, II | 8    |
| 10.320                 | Calculus I                           | 4    |
| 11.317, 11.318, 11.319 | Physics I, II, III                   | 12   |

**Second Year**

|                        |   |   |
|------------------------|---|---|
| 10.321, 10.322, 10.323 | Calculus II, III, IV                        | 6 |
| 03.301, 03.302, 03.303 | Circuit Theory I, II, III                   | 6 |
| 09.307, 09.308, 09.309 | Electrical & Electronic Graphics I, II, III | 6 |
| 09.351, 09.352, 09.353 | Princ. of Computer Programming I, II, III   | 6 |

**Third Year**

|                        |                                     |   |
|------------------------|-------------------------------------|---|
| 11.320                 | Semiconductor Physics & Devices and | 4 |
| 03.311, 03.312         | Electronics I, II                   | 8 |
| 09.354, 09.355, 09.356 | Computer Systems I, II, III         | 6 |
| 10.324, 10.325, 10.326 | Differential Equations I, II, III   | 6 |

**Fourth Year**

|                        |  |   |
|------------------------|--|---|
| 03.323, 03.391, 03.392 | Electronic Labs. & Computer Technology Labs. II, III | 6 |
| 03.371, 03.372, 03.373 | Analog, Digital and Hybrid Comps. I, II, III         | 6 |
|                        | Any 2 of 4   |   |
| 03.387, 03.388, 03.389 | Active Integrated Circuits I, II, III                | 6 |
| 09.357, 09.358, 09.359 | Computer Aided Design I, II, III                     | 6 |
| 09.361, 09.362, 09.363 | Computer Controlled Systems I, II, III               | 6 |
| 10.351, 10.352, 10.353 | Advanced Mathematics I, II, III                      | 6 |

**Note:** Associate degree graduates may transfer applicable credits toward the requirements in other Lincoln College programs leading to the Associate in Engineering, Associate in Science, or Bachelor of Engineering Technology degree.

**Control Systems Engineering Technology***Leading to a Certificate*

The program in Control Systems Engineering Technology is designed to provide electrical and electronic background required in the development of control equipment and systems related to the age of automation. Practicing engineers who wish to avoid technological obsolescence may keep abreast of current control practices. The program presumes graduation from either associate in engineering degree programs in Electrical Power or Electronic Engineering Technology, or bachelor degree programs in a branch of engineering. A certificate will be awarded upon completion of 30 quarter hours of credit and a minimum overall Q.P.A. requirement of 1.8 in Lincoln College.

*Required Courses*

| Course Number          | Course                                  | Q.H. |
|------------------------|---|------|
| 03.361, 03.362, 03.363 | Transients in Linear Systems I, II, III | 6    |
| 10.324, 10.325, 10.326 | Differential Equations I, II, III       | 6    |

*Full-Year Elective Sequences*

(Require completion of Transients in Linear Systems)

|                        |  |   |
|------------------------|--|---|
| 03.364, 03.365, 03.366 | Advanced Circuit Theory I, II, III                         | 6 |
| 03.367, 03.368, 03.369 | Advanced Pulse and Digital Circuits I, II, III             | 6 |
| 03.371, 03.372, 03.373 | Analog, Digital, and Hybrid Computers I, II, III           | 6 |
| 03.374, 03.375, 03.376 | Digital Systems I, II, III                                 | 6 |
| 03.377, 03.378, 03.379 | Control Systems I, II, III                                 | 6 |
| 03.381, 03.382, 03.383 | Transistor Circuit Engineering I, II, III                  | 6 |
| 03.384, 03.385, 03.386 | Microwave Semiconductor Devices<br>and Circuits I, II, III | 6 |
| 03.387, 03.388, 03.389 | Active Integrated Circuits I, II, III                      | 6 |
| 03.314, 03.315, 03.316 | Pulse and Digital Circuits I, II, III                      | 6 |

## Environmental Control Technology

### *Leading to the degree of Bachelor of Engineering Technology*

This program is designed to meet the increasing demand for qualified manpower to operate and maintain facilities and services which relate to the control of our environment. From work ranging from air sampling to water treatment and industrial waste control, graduates will take important positions now waiting to be filled.

The program is unique in its mixture of physical and physiological sciences. In addition, the student has the option of selecting technical electives which are oriented toward physical facilities or the study of the user of the facilities—man.

**Prerequisite:** Satisfactory completion of the Mathematics Placement Test or the Introductory Mathematics I and II courses (10.301 and 10.302). The Mathematics Placement Test must be taken prior to registration.

#### First Year

| Course Number          | Course                        | Q.H. |
|------------------------|-------------------------------|------|
| 10.307, 10.308         | College Algebra & Trig. I, II | 8    |
| 10.320                 | Calculus I                    | 4    |
| 11.317, 11.318, 11.319 | Physics I, II, III            | 12   |

#### Second Year

|                        |                              |    |
|------------------------|------------------------------|----|
| 30.601, 30.602         | Composition & Rhetoric I, II | 4  |
| 18.511, 18.512, 18.513 | Biology I, II, III           | 12 |
| 12.544, 12.545, 12.546 | Gen. Chemistry I, II, III    | 6  |
| 12.547, 12.548, 12.549 | Gen. Chem. Labs. I, II, III  | 3  |

#### Third Year

|                        |                                |    |
|------------------------|--------------------------------|----|
| 12.521, 12.522, 12.523 | Analytical Chem. I, II, III    | 6  |
| 18.521, 18.522, 18.523 | Microbiology I, II, III        | 12 |
| 02.301, 02.302, 02.303 | Mechanics (Statics) I, II, III | 6  |

#### Fourth Year

|                        |   |   |
|------------------------|---|---|
| 01.380, 01.381, 01.382 | Environmental Labs. I, II, III          | 6 |
| 09.351, 09.352, 09.353 | Principles of Computer Prog. I, II, III | 6 |
| 01.341, 01.342, 01.343 | Fluid Mechanics I, II, III              | 6 |
| 23.501, 23.502, 23.503 | Western Civilization I, II, III         | 6 |

#### Fifth Year

|                        |                                 |   |
|------------------------|---------------------------------|---|
| 10.321, 10.322, 10.323 | Calculus II, III, IV            | 6 |
| 09.311, 09.312, 09.313 | Engineering Graphics I, II, III | 6 |
| 18.561, 18.562, 18.563 | Ecology I, II, III              | 6 |
| 02.321, 02.322, 02.323 | Stress Analysis I, II, III      | 6 |

Sixth Year

| Course Number          | Course  | Q.H. |
|------------------------|---|------|
| 39.501, 39.502, 39.503 | Economic Principles & Prob. I, II, III  | 6    |
| 02.341, 02.342, 02.343 | Materials I, II, III  | 6    |
| 18.524, 18.525, 18.526 | <div> <div>Tech. Elective</div> <div> Human Anat. &amp; Physiology or<br/>Structural Analysis<br/>Liberal Arts Elective </div> </div> | 9    |
| 01.324, 01.325, 01.326 |   | 6    |
|                        |   | 6    |

Seventh Year

|                        |  |   |
|------------------------|--|---|
| 01.383, 01.384, 01.385 | Public Health Engineering 1, II, III   | 6 |
| 02.351, 02.352, 02.353 | <div> <div>Tech. Elective</div> <div> Thermodynamics or<br/>Design of Structures<br/>Liberal Arts Elective </div> </div> | 6 |
| 01.331, 01.332, 01.333 |  | 6 |
|                        |  | 6 |

Eighth Year

|                        |  |   |
|------------------------|--|---|
| 01.386, 01.387, 01.388 | Environmental Design I, II, III  | 6 |
| 02.357, 02.358, 02.359 | <div> <div>Tech. Elective</div> <div> Heat Engineering or<br/>Reinf. Concrete Design<br/>Liberal Arts Elective </div> </div> | 6 |
| 01.371, 01.372, 01.373 |  | 6 |
|                        |  | 6 |

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Total B.E.T. Degree 181 or 184

Transfer students may petition for elective credits for courses that are suitable to the curriculum.

Graduates of the Bachelor of Engineering Technology program desiring to pursue programs leading to the Bachelor of Science in Engineering degree at Northeastern University may apply through the Admissions Office (150 RI). Programs in Electrical, Civil, and Mechanical Engineering are available on a part-time as well as a regular cooperative program. Industrial and Chemical Engineering programs are available only during the regular day programs.

Candidates must have at least a 2.75 cumulative average and complete a course program prescribed by the major department and the Dean's Office.

**Mechanical-Structural Engineering Technology**

(Accredited—Engineers' Council for Professional Development)

*Leading to the Degree of Bachelor of Engineering Technology*

The program in Mechanical-Structural Engineering Technology is interdisciplinary in that it prepares the graduate to assume responsibilities related to both the planning and construction of relatively static structures such as buildings, bridges, docks, etc., and also the design and production of dynamic machine tools, machinery, and other mechanical devices. The mechanical and structural content is integrated so as to be complementary and to provide a broad base for design problems of great variety. Employment opportunities lie in the architectural, construction, civil, and mechanical professions and companies.

*Prerequisite:* Satisfactory completion of the Mathematics Placement Test or the Introductory Mathematics I and II courses (10.301 and 10.302). The Mathematics Placement Test must be taken prior to registration.

**First Year**

| Course Number          | Course                               | Q.H. |
|------------------------|--------------------------------------|------|
| 10.307, 10.308         | College Algebra & Trigonometry I, II | 8    |
| 10.320                 | Calculus I                           | 4    |
| 11.317, 11.318, 11.319 | Physics I, II, III                   | 12   |

**Second Year**

|                        |   |   |
|------------------------|---|---|
| 09.311, 09.312, 09.313 | Engineering Graphics I, II, III               | 6 |
| 09.351, 09.352, 09.353 | Principles of Computer Programming I, II, III | 6 |
| 10.321, 10.322, 10.323 | Calculus II, III, IV                          | 6 |
| 30.601, 30.602         | Composition and Rhetoric I, II                | 4 |
|                        | English Elective                              | 2 |

**Third Year**

|                        |                                |   |
|------------------------|--------------------------------|---|
| 01.301, 01.302, 01.303 | Surveying I, II, III           | 6 |
| 02.301, 02.302, 02.303 | Mechanics (Statics) I, II, III | 6 |
| 09.314, 09.315, 09.316 | Engineering Design I, II, III  | 6 |
|                        | *Elective I, II, III           | 6 |

**Fourth Year**

|                        |                                       |   |
|------------------------|---------------------------------------|---|
| 01.321, 01.322, 01.233 | Introduction to Structures I, II, III | 6 |
| 02.304, 02.305, 02.306 | Mechanics (Dynamics) I, II, III       | 6 |
| 02.321, 02.322, 02.323 | Stress Analysis I, II, III            | 6 |
| 23.501, 23.502, 23.503 | Western Civilization I, II, III       | 6 |

\*Before registering for any electives, the student should submit a proposed program of elective courses—preferably representing a minor field of concentration consistent with his personal career objectives—for approval by the Academic Standing Committee. 10.324, 10.325, 10.326 Differential Equations I, II, III is recommended for all students planning advanced engineering technology subjects.

**Fifth Year**

|                        |   |   |
|------------------------|---|---|
| 01.324, 01.325, 01.326 | Structural Analysis I, II, III              | 6 |
| 01.341, 01.342, 01.343 | Fluid Mechanics I, II, III                  | 6 |
| 02.341, 02.342, 02.343 | Materials I, II, III                        | 6 |
| 39.501, 39.502, 39.503 | Economic Principles and Problems I, II, III | 6 |

**Sixth Year**

|                        |                                     |   |
|------------------------|-------------------------------------|---|
| 01.331, 01.332, 01.333 | Design of Structures I, II, III     | 6 |
| 02.324, 02.325, 02.326 | Advanced Stress Analysis I, II, III | 6 |
| 19.501, 19.502, 19.503 | Psychology I, II, III               | 6 |
|                        | *Elective I, II, III                | 6 |

**Seventh Year**

|                        |                                       |   |
|------------------------|---------------------------------------|---|
| 01.371, 01.372, 01.373 | Reinforced Concrete Design I, II, III | 6 |
| 02.327, 02.328, 02.329 | Mechanical Design I, II, III          | 6 |
|                        | *Elective I, II, III                  | 6 |

**Eighth Year**

|                        |  |   |
|------------------------|--|---|
| 02.331, 02.332, 02.333 | Mechanical Technology Labs. I, II, III | 6 |
| 30.604, 30.605         | Introduction to Literary Forms I, II   | 4 |
|                        | English Elective                       | 2 |
|                        | *Elective I, II, III                   | 6 |

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Total B.E.T. degree 180

*Suggested Technical Electives*

|                        |   |   |
|------------------------|---|---|
| 01.361, 01.362, 01.363 | Materials and Soil Mechanics            | 6 |
| 02.337, 02.338, 02.339 | Mechanical Vibrations I, II, III        | 6 |
| 01.327, 01.328, 01.329 | Advanced Structural Analysis I, II, III | 6 |
| 02.351, 02.352, 02.353 | Thermodynamics I, II, III               | 6 |
| *93.402, 93.403        | Technical Communications I, II          | 4 |

Elective courses for which proper preparation exists may be chosen from within or outside of the Mechanical-Structural Engineering discipline.

Transfer students may petition for elective credits for courses that are suitable to the curriculum.

Graduates of the Bachelor of Engineering Technology Program desiring to pursue programs leading to the Bachelor of Science in Engineering degree at Northeastern University may apply through the Admissions Office (150 RI). Programs in Electrical, Civil, and Mechanical Engineering are available on a part-time as well as a regular cooperative program. Industrial and Chemical Engineering programs are available only during the regular day programs.

Candidates must have at least a 2.75 cumulative average and complete a course program prescribed by the major department and the Dean's Office.

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\*Before registering for any electives, the student should submit a proposed program of elective courses—preferably representing a minor field of concentration consistent with his personal career objectives—for approval by the Academic Standing Committee.

10.324, 10.325, 10.326 Differential Equations I, II, III is recommended for all students planning advanced engineering technology subjects.

\*\*93.402, 93.403 Technical Communications I, II may be used to fulfill English elective requirements.



# **description of courses**

On the pages which follow is a numerical and descriptive listing of courses offered in the several curricula of Lincoln College. Although not all courses are offered every year, all will be offered during the normal period of each student's curriculum. The term "prerequisite" indicates a course that must be taken before undertaking the advanced course to which it applies.

A "quarter hour" equals approximately three clock hours of work (ordinarily, one hour of class and two hours of preparation a week for a quarter of 12 weeks' duration). Laboratory and drawing courses normally require fewer hours of outside preparation and therefore carry less credit than lecture courses.

## **Abbreviations**

prereq.—prerequisite  
coreq.—corequisite  
cl.—class hours

lab.—laboratory hours  
q.h.—quarter hours

## **Policy on Changes of Program**

Lincoln College reserves the right to cancel, modify, or add to the courses offered or to change the order or content of courses in any curriculum.

The University further reserves the right to change the requirements for graduation, tuition, and fees charged, and other regulations. However, no change in tuition and fees at any time shall become effective until the school year following that in which it is announced.

Any changes which may be made from time to time relative to the above policy shall be applicable to all students in the school, college, or department concerned, including former students who may re-enroll.

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| 04 <i>Chemical Engineering Technology</i>      | 130-132 |
| 09 <i>Engineering Graphics and Computation</i> | 132-135 |
| 10 <i>Mathematics</i>                          | 135-138 |
| 11 <i>Physics</i>                              | 138-140 |
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## CIVIL ENGINEERING TECHNOLOGY

### **01.301 Surveying I** (2 cl., 2 q.h.)

Surveying principles; theory of measurements; basic traverse computation and adjustments and inverse leveling. *Preq. 10.308.*

### **01.302 Surveying II** (2 cl., 2 q.h.)

Stadia principles and topography; simple and compound curves; area calculations. *Prereq. 01.301.*

### **01.303 Surveying III** (2 cl., 2 q.h.)

Vertical curves, earthwork computations; solution of the mass diagram. *Prereq. 01.302.*

### **01.304 Advanced Surveying I** (2 cl., 2 lab., 2 q.h.)

Introduction to observations for latitude, time azimuth including basic spherical trigonometry. *Prereq. 01.303.*

### **01.305 Advanced Surveying II** (1 cl., 2 lab., 2 q.h.)

Precise leveling, triangulation, and base line measurements. Use of the geodimeter and telurometer. *Prereq. 01.304.*

**01.306 Advanced Surveying III** (1 cl., 2 lab., 2 q.h.)

Basic principles of photogrammetry and map making from aerial photographs. Map projections. *Prereq.* 01.305.

**01.307 Legal Aspects of Surveying I** (2 cl., 2 q.h.)

Registry of deeds and probate; ownership of land, deeds; descriptions and qualifying expressions; monument rule; metes and bounds; plans; apportionment. *Prereq.* 01.303.

**01.308 Legal Aspects of Surveying II** (2 cl., 2 q.h.)

Adverse possession; casement; title insurance; Massachusetts land court; expert witness. *Prereq.* 01.307.

**01.309 Legal Aspects of Surveying III** (2 cl., 2 q.h.)

Water rights; riparian rights; navigable vs non-navigable; Mill acts; surface water rules; zoning-subdivision control; zoning boards of appeal; acceptance of a town way; professional ethics of a land surveyor; registration law. *Prereq.* 01.308.

**01.310 Surveying** (2 cl., 2 q.h.)

An outdoor course in use of level, level circuit, vertical control, use of the transit, taping exercises, closed traverse—transit-tape, horizontal control, topography—stadia and plane table, layout problems, horizontal and vertical curves, spiral easements. *Prereq.* 01.303 (Summer Session).

**01.311 Highway Engineering I** (2 cl., 2 q.h.)

Engineering considerations in the planning and construction of modern highways and highway routing. *Prereq.* 01.301.

**01.312 Highway Engineering II** (2 cl., 2 q.h.)

Rates of grade, superelevation, flexible and rigid pavements, and other features of highway design. *Prereq.* 01.311.

**01.313 Highway Engineering III** (2 cl., 2 q.h.)

Traffic flow and traffic control; computer applications to transportation problems. *Prereq.* 01.312.

**01.314 Surveying Practice I** (1 cl., 2 lab., 2 q.h.)

Computing and balancing a control traverse; calculating exact property lines; vertical control survey; plotting from topographic field notes. *Prereq.* 01.303.

**01.315 Surveying Practice II** (1 cl., 2 lab., 2 q.h.)

Scale drawing of the proposed subdivision; making calculations of the subdivision required by the land court; street profiles showing grades; drainage study. *Prereq.* 01.314.

**01.321 Introduction to Structures I** (1 cl., 2 lab., 2 q.h.)

Framing plans and details for steel structures. *Prereq.* 09.313 and 02.303.

**01.322 Introduction to Structures II** (1 cl., 2 lab., 2 q.h.)

Structural shop drafting and the evaluation of load capacities of rivets, welds, and bolts for structural connections using the AISC code. *Prereq.* 01.321.

**01.323 Introduction to Structures III** (1 cl., 2 lab., 2 q.h.)

Design and detailing of joints including standard connections, seats, and brackets. *Prereq.* 01.322.

**01.324 Structural Analysis I** (2 cl., 2 q.h.)

Reactions, shears, bending moments, and forces developed by loads on beams and trusses; analytical and graphical methods. *Prereq.* 02.323.

**01.325 Structural Analysis II** (2 cl., 2 q.h.)

Influence lines for beams, girders, and trusses; solutions for forces from moving load system on statically determinate structures. *Prereq.* 01.324.

**01.326 Structural Analysis III** (2 cl., 2 q.h.)

Introduction to classical methods of deflection solutions of beams and trusses. Methods of solving statically indeterminate structures. *Prereq.* 01.325.

**01.327 Advanced Structural Analysis I** (2 cl., 2 q.h.)

Analysis of indeterminacy and instability; analysis of statically indeterminate structures using Castigliano, virtual work, methods of deflections, and the neutral point methods. *Prereq.* 01.326.

**01.328 Advanced Structural Analysis II** (2 cl., 2 q.h.)

Analysis of statically indeterminate structures using the column analogy, moment, area, elastic weights, and conjugate structures. *Prereq.* 01.327.

**01.329 Advanced Structural Analysis III** (2 cl., 2 q.h.)

Analysis of statically indeterminate structures using Williot-Mohr, slope deflection, and moment distribution. *Prereq.* 01.328.

**01.331 Design of Structures I** (2 cl., 2 q.h.)

Design of steel members in structural frames; tension, compression, bending, and eccentrically loaded members. *Prereq.* 01.323 and 02.323.

**01.332 Design of Structures II** (2 cl., 2 q.h.)

Design of plate girders, highway bridge decks, and roof-framing systems. *Prereq.* 01.331.

**01.333 Design of Structures III** (2 cl., 2 q.h.)

Composite design in bridges and buildings; introduction to plastic design methods in steel. *Prereq.* 01.332.

**01.334 Advanced Structural Design I** (2 cl., 2 q.h.)

Design of continuous frames in structural steel, moment resistant connections, and column bases. *Prereq.* 01.326, 01.333, 01.373.

**01.335 Advanced Structural Design II** (2 cl., 2 q.h.)

Design of continuous frames in reinforced concrete; introduction to prestressed concrete member design. *Prereq.* 01.334.

**01.336 Advanced Structural Design III** (2 cl., 2 q.h.)

Design of foundations for structures; spread footings, combined footings, mats and pile foundations. *Prereq.* 01.335.

**01.341 Fluid Mechanics I** (2 cl., 2 q.h.)

Hydrostatics; principles governing fluids at rest; pressure measurement; hydrostatic forces on submerged areas and objects; simple dams; fluids in moving vessels; hoop tension. *Prereq.* 02.303.

**01.342 Fluid Mechanics II** (2 cl., 2 q.h.)

Fluid dynamics; kinematics of flow; continuity, momentum, and energy equations; orifices; pi theorem; laminar and turbulent flow. *Prereq.* 01.341.

**01.343 Fluid Mechanics III** (2 cl., 2 q.h.)

Flow in closed conduits using Moody diagram; empirical formulae for closed conduit flow; minor losses; compound pipe systems; open channel flow and Manning formula; specific energy and stage relationships; fluid measurement systems. *Prereq.* 01.342.

**01.351 Environmental Engineering** (2 cl., 2 q.h.)

Principles of water supply engineering; population forecasting; quality and quantity of water for various uses; water treatment processes. *Prereq.* 01.343 and 12.546 or 12.509.

**01.352 Environmental Engineering II** (2 cl., 2 q.h.)

Collection and disposal of wastewater and storm water; modern methods of treatment and wastewater plant operation. *Prereq.* 01.351.

**01.353 Environmental Engineering III** (1 cl., 2 lab., 2 q.h.)

Layout and design of water treatment and sewage treatment plants. Instrumentation and electrical equipment. *Prereq.* 01.352.

**01.361 Materials and Soil Mechanics I**

Physical properties of Portland cement, aggregates, mixing water, and admixtures; proportioning of batches; mixing, placing, and finishing of concrete; bituminous materials. *Prereq.* 02.303.

**01.362 Materials and Soil Mechanics II**

Index properties, soil moisture, and structure; compressibility, theory of consolidation. *Prereq.* 01.361.

**01.363 Materials and Soil Mechanics III**

Shearing strength of soils, stress analysis, settlement calculations; lateral earth pressures, bearing capacity of shallow footings; soil compaction, stabilization and site investigation. *Prereq.* 01.362.

**01.364 Materials & Soil Mechanics Lab.** (2 cl., 2 q.h.)

Grain size analysis; variables in concrete mix; bituminous testing, specific gravity—CBR optimum moisture; direct shear, consolidation; seepage and flow nets; unconfined compression test. *Prereq.* 01.363.

**01.371 Reinforced-Concrete Design I** (2 cl., 2 q.h.)

Design of bending members in reinforced concrete, using elastic and ultimate-strength theories. *Prereq.* 02.323.

**01.372 Reinforced-Concrete Design II** (2 cl., 2 q.h.)

Design of axially and eccentrically loaded columns by elastic and ultimate strength principles. *Prereq.* 01.371.

**01.373 Reinforced-Concrete Design III** (2 cl., 2 q.h.)

Reinforced-concrete design of basic structures including consideration of continuity. *Prereq.* 01.372.

**01.380 Environmental Lab. 1** (2½ lab., 2 q.h.)

Methods and techniques for the examination of water. Treatment efficiency is included for various types of water treatment. *Prereq.* 12.546 or *equiv.*

**01.381 Environmental Lab. II** (2½ lab., 2 q.h.)

Methods and techniques for the examination of wastewater and industrial waste discharges. Both chemical and bacteriological analysis are included.

**01.382 Environmental Lab. III** (2½ lab., 2 q.h.)

Advanced methods of measuring impurities in air, water, and solid waste discharges.

**01.383 Public Health Engineering I** (2 cl., 2 q.h.)

The principles and practice of public health engineering. Administrative and legal aspects of public health quality control.

**01.384 Public Health Engineering II** (2 cl., 2 q.h.)

Standard methods employed in public health evaluations of foods, dairy products, drinking water, shellfish, air, and recreational waters.

**01.385 Public Health Engineering III** (2 cl., 2 q.h.)

Engineering control of air pollution, refuse disposal, institutional sanitation, insect vectors, and rodent control.

**01.386 Environmental Design I** (2 cl., 2 q.h.)

Lecture and design problems in environmental quality, water resources, and waste treatment.

**01.387 Environmental Design II** (2 cl., 2 q.h.)

Lecture and design problems in wastewater treatment, chlorination, and water pollution control.

**01.388 Environmental Design III** (2 cl., 2 q.h.)

Lecture and design problems in air pollution control, solid waste disposal, and industrial waste disposal.

**01.390 Construction Administration** (2 cl., 2 q.h.)

Contract, specifications, and bidding procedures; estimating and scheduling,

including the critical path method; discussion of personnel administration and union negotiation. *Prereq. none.*

**01.393 Architectural Design I** (2 cl., 2 q.h.)

Basic architectural design concepts; proportion, scale, form, massing, color, texture, lighting; lecture and drawings. *Prereq. none.*

**01.394 Architectural Design II** (2 cl., 2 q.h.)

Orientation of structures; site organization; selection of building materials; consideration of the building process. *Prereq. 01.393.*

**01.395 Architectural Design III** (2 cl., 2 q.h.)

Basic architectural design projects assigned by the instructor. *Prereq. 01.394.*

**01.401 Technology of Modern Architecture I** (2 cl., 2 q.h.)

General background of architectural styles both historical and contemporary, with emphasis on engineering design aspects and construction procedures of various types of buildings. *Prereq. none.*

**01.402 Technology of Modern Architecture II** (2 cl., 2 q.h.)

Contemporary architecture, emphasizing the engineering design aspects and construction procedures required for modern buildings. *Prereq. none.*

## MECHANICAL ENGINEERING TECHNOLOGY

**02.301 Mechanics I (Statics)** (2 cl. 2 q.h.)

Forces, moments, couples, statics of particles, and rigid bodies in two and three dimensions. *Prereq. 10.320 and 11.317.*

**02.302 Mechanics II (Statics)** (2 cl., 2 q.h.)

Distributed forces—external and internal; first moments and centroids; analysis of structures—trusses, frames, and machines. *Prereq. 2.301.*

**02.303 Mechanics III (Statics)** (2 cl., 2 q.h.)

Friction, second moments, and virtual work. *Prereq. 02.302.*

**02.304 Mechanics I (Dynamics)** (2 cl., 2 q.h.)

Kinematics of particles—rectilinear and curvilinear motion of dynamic particles—force; mass and acceleration; work and energy. *Prereq. 02.303.*

**02.305 Mechanics II (Dynamics)** (2 cl., 2 q.h.)

Impulse and momentum of particles; kinematics and dynamics of rigid bodies—force mass and acceleration. *Prereq. 02.304.*

**02.306 Mechanics III (Dynamics)** (2 cl., 2 q.h.)

Dynamics of rigid bodies—work and energy, impulse and momentum; introduction to mechanical vibration. *Prereq. 02.305.*

**02.307 Mechanics Statics** (4 cl., 4 q.h.)

Forces, moments, couples, statics of particles, and rigid bodies in three dimensions; distributed forces—external and internal; first moments and

centroids; analysis of structures, second moments, and virtual work. *Prereq.* 10.320 and 11.317.

**02.321 Stress Analysis I** (2 cl., 2 q.h.)

Stress and deformation; mechanical properties of materials; allowable stresses and factor of safety; axially loaded indeterminate members; effects of temperature on stresses and strains; thin cylinders and spheres; riveted and welded joints. *Prereq.* 02.302.

**02.322 Stress Analysis II** (2 cl., 2 q.h.)

Shear and bending moment in beams; flexural and transverse shearing; stresses in beams; design of beams. *Prereq.* 02.321.

**02.323 Stress Analysis III** (2 cl., 2 q.h.)

Determinate and indeterminate beam deflections and reactions by numerical and graphical integration and area moment methods; theorem of three moments. *Prereq.* 02.322.

**02.324 Advanced Stress Analysis I** (2 cl., 2 q.h.)

Torsional stresses and strains; power transmission; eccentric loads on struts, beams, riveted and welded joints; combined stresses, principal stresses, Mohr's circle; theories of failure. *Prereq.* 02.323.

**02.325 Advanced Stress Analysis II** (2 cl., 2 q.h.)

Curved beams; non-symmetrical bending of beams; shear-center and shear stresses on thin sections; composite beams. *Prereq.* 02.324.

**02.326 Advanced Stress Analysis III** (2 cl., 2 q.h.)

Columns; energy absorption and resilience; dynamic loading; deflection of beams by energy methods; bolted fastenings. *Prereq.* 02.324.

**02.327 Mechanical Design I** (2 cl., 2 q.h.)

Introduction and principles of design, properties and selection of materials; stress concentrations; strength under combined stresses; theories of failure; impact and fluctuating and repeated loads. *Prereq.* 02.306, 02.323.

**02.328 Mechanical Design II** (2 cl., 2 q.h.)

Stresses; deformation and design of fasteners, screws, joints, springs, and bearings; lubrication and journal bearings. *Prereq.* 02.327.

**02.329 Mechanical Design III** (2 cl., 2 q.h.)

Stresses and power transmission of spur, bevel, and worm gear; shaft design; clutches and brakes. *Prereq.* 02.327.

**02.331 Mechanical Technology Laboratory I** (2 $\frac{1}{2}$  lab., 2 q.h.)

Experiments concerning the physical properties of materials; instrumentation and measurement. *Prereq.* 02.343, 02.324 or concurrently.

**02.332 Mechanical Technology Laboratory II** (2 $\frac{1}{2}$  lab., 2 q.h.)

Experiments concerning compressible and incompressible fluids; experimental techniques. *Prereq.* 02.331, 01.341.



**02.333 Mechanical Technology Laboratory III** (2½ lab., 2 q.h.)

Experiments of a more advanced nature; introduction to the analog computer and experimental stress analysis. *Prereq.* 02.332, 02.325.

**02.334 Experimental Stress Analysis I** (2 cl., 2 q.h.)

Theory and experimentation showing the application of extensometers and electrical strain gages as transducers and in the field of experimental stress and strain analysis. *Prereq.* 02.324.

**02.335 Experimental Stress Analysis II** (2 cl., 2 q.h.)

Theory and laboratory practice of photoelastic methods as applied to classical model analysis and modern coating analysis. *Prereq.* 02.334.

**02.336 Experimental Stress Analysis III** (2 cl., 2 q.h.)

The use of resinous and ceramic brittle coatings in experimental analysis; Moiré method of strain analysis; statistical treatment of experimental data. *Prereq.* 02.335.

**02.337 Mechanical Vibrations I** (2 cl., 2 q.h.)

Elements of vibrating systems, one degree of freedom (undamped free and forced vibration from Newton's law of motion and energy methods); natural frequencies; damped free and forced vibration; impedance and mobility. *Prereq.* 02.306.

**02.338 Mechanical Vibrations II** (2 cl., 2 q.h.)

Systems with more than one degree of freedom; influence coefficients, Lagrange's equations, generalized coordinates, vibration absorber. *Prereq.* 02.337.

**02.339 Mechanical Vibrations III** (2 cl., 2 q.h.)

Natural frequencies by Rayleigh methods and Holzer methods for multi-degree of freedom; application problems with combined rotation and translation; Laplace transforms and electro-mechanical analogs. *Prereq.* 02.338.

**02.341 Materials I** (2 cl., 2 q.h.)

Lectures on: fundamental material structures, general information covering theoretical aspects of properties, testing and failure of materials supplemented by visual aids. *Prereq.* none.

**02.342 Materials II** (2 cl., 2 q.h.)

Lectures on: alloying and hardening of metals, refinement of metals, equilibrium diagrams, characteristics of engineering materials, principles of material fabrication. *Prereq.* 02.341.

**02.343 Materials III** (2 cl., 2 q.h.)

Lectures on: inorganic materials, i.e., polymers, glasses, ceramics, cements, wood; and materials having important electrical and magnetic properties; also a summary of the most up-to-date applications for the fabrication and uses of both metals and non-metals. *Prereq.* 02.342.

**02.344 Applied Metallurgy I** (1 cl., 1 lab., 2 q.h.)

Lectures: structures of metals, imperfections, phase diagrams, effect of temperature on structure and properties of metals (annealing, recrystallization,

recovery, precipitation, diffusion), strengthening mechanisms, mechanical properties of non-ferrous metals.

Laboratory: experiments in preparation of samples, selection, polishing, and etching; examination of non-ferrous metals; use of the microscope; linear analysis; construction of cooling curves and simple binary phase diagrams. *Prereq.* 02.342.

#### **02.345 Applied Metallurgy II (1 cl., 1 lab., 2 q.h.)**

Lectures: mechanical properties of ferrous metals, the iron carbon diagram, high temperature alloys, hardening methods, impact tests, effects of environment on metals.

Laboratory: experiments on analysis of stress-strain diagrams of iron and steel, heat treatment of steels, surface corrosion, tempering and drawing, use of metallograph and analysis of the results. *Prereq.* 02.344.

#### **02.346 Applied Metallurgy III (1 cl., 1 lab., 2 q.h.)**

Lectures: manufacturing processes, methods of fabrication; limitations on the use of different materials and processes; casting, welding, cutting, drawing, powder metallurgy.

Laboratory: experiments in cold rolling, swagging, drawing of non-ferrous metals and the analysis of the results; tension, shear, fatigue, and machinability tests on ferrous metals. *Prereq.* 02.345.

#### **02.347 Principles of Aerodynamics (4 cl., 4 q.h.)**

This is a first course in aerodynamics covering the fundamentals of theory and application. Material presented includes: properties of air, fluid flow principles, lift, drag, air foil, and wing theory; auxiliary lift devices; stability and control; and flight vehicle performance. *Prereq.* 01.343.

#### **02.351 Thermodynamics I (2 cl., 2 q.h.)**

General theory of energy and heat transfer; laws of thermodynamics; basic equations of energy transformation; thermodynamic properties and behavior of perfect gases; introduction to the Carnot cycle. *Prereq.* 11.318.

#### **02.352 Thermodynamics II (2 cl., 2 q.h.)**

Concepts of availability of energy steady and non-flow processes; theory of fluid flow through orifices and nozzles, and compression of gases; thermodynamic analysis of internal combustion engines including the Otto and Diesel Cycles. *Prereq.* 02.351.

#### **02.353 Thermodynamics III (2 cl., 2 q.h.)**

Combustion of fossil fuels for their energy transfer; thermodynamic properties and processes of liquids and vapors, tables and Mollier diagram; theory of vapor power cycles; analysis of external combustion engines including the Rankine and Brayton Cycles. *Prereq.* 02.352.

#### **02.354 Heat Transfer I (2 cl., 2 q.h.)**

The primary modes of heat transfer; thermal conductance/resistance concept; thermal-electrical analogy; combined heat transfer mechanisms; basic equations of conduction; thermal conductivity; analytical solutions of various steady state conduction problems. *Prereq.* 02.353.

**02.355 Heat Transfer II** (2 cl., 2 q.h.)

Dimensional analysis and similarity considerations; natural and forced convection; hydrodynamic and thermal boundary layers; log-mean temperature differences; overall heat transfer coefficients; applications to heat exchangers. *Prereq.* 02.354.

**02.356 Heat Transfer III** (2 cl., 2 q.h.)

Black body radiation; Kirchoff's Law; emissivity and absorptivity; radiation between simple bodies; graphical and numerical methods applied to steady state, conduction problems; radiation and convection effects; transient heat transfer; numerical methods applied to transient problems; heat transfer engineering problems. *Prereq.* 02.355.

**02.357 Heat Engineering I (Refrigeration)** (2 cl., 2 q.h.)

Principles of gas compression; analysis of vapor compression; refrigeration systems; low temperature refrigeration cycles; and absorption refrigeration systems. *Prereq.* 02.353.

**02.358 Heat Engineering II (Air Conditioning)** (2 cl., 2 q.h.)

Air conditioning principles including psychometrics and heat pumps; calculation of heating and cooling loads in accordance with A.S.H.R.A.E. practices. *Prereq.* 02.353.

**02.359 Heat Engineering III (Turbines)** (2 cl., 2 q.h.)

Design and performance of steam and gas turbines; spark-ignition and compression-ignition engine design and performance, fan performance. *Prereq.* 02.353.

**02.361 Heat Technology Laboratory I** (2½ lab., 2 q.h.)

Experiments illustrating principles of thermodynamics and heat transfer; instrumentation and measurement. *Prereq.* 02.353.

**02.362 Heat Technology Laboratory II** (2½ lab., 2 q.h.)

Experiments on various types of heat engines; experimental techniques. *Prereq.* 02.361, 02.354 and 02.357.

**02.363 Heat Technology Laboratory III** (2½ lab., 2 q.h.)

Experiments of a more advanced nature further illustrating the principles of thermodynamics and making use of the student's increased theoretical background; simulation of heat problems on analog computer. *Prereq.* 02.362.

**02.401 Man and Materials** (2 cl., 2 q.h.)

(See General Interest Courses, pages 162-163.)

**02.411 Mechanics A** (4 cl., 4 q.h.)

(Day Curriculum)

Forces, moments, couples, statics of particles and rigid bodies in two and three dimensions; distributed forces—external and internal; first moments and centroids; analysis of structure—trusses, frames, and machines. *Prereq.* 10.320, 11.317.

**02.412 Mechanics B** (4 cl., 4 q.h.)

(Day Curriculum)

Friction, second moments, and virtual work; kinematics of particles—recti-

linear and curvilinear motion of dynamic particles—force, mass and acceleration, work and energy. *Prereq.* 02.411.

**02.413 Mechanics C** (4 cl., 4 q.h.) (Day Curriculum)

Impulse and momentum of particles; kinematics and dynamics of rigid bodies—force, mass, and acceleration; dynamics of rigid bodies—work and energy, impulse and momentum; introduction to mechanical vibration. *Prereq.* 02.412.

**02.414 Stress Analysis A** (4 cl., 4 q.h.) (Day Curriculum)

Stress and deformation; mechanical properties of materials; allowable stresses and factor of safety; axially loaded indeterminate members; effects of temperature on stresses and strains; thin cylinders and spheres; riveted and welded joints; shear and bending moment in beams; flexural and transverse shearing; stresses in beams; design of beams. *Prereq.* 02.411.

**02.415 Stress Analysis B** (3 cl., 4 q.h.) (Day Curriculum)

Determinate and indeterminate beam deflections and reactions by numerical and graphical integration and area moment methods; theorem of three moments. Torsional stresses and strains; power transmission; eccentric loads on struts, beams, riveted and welded joints; combined stresses; principal stresses; Mohr's circle; theories of failure. *Prereq.* 02.414.

**02.416 Stress Analysis C** (4 cl., 4 q.h.) (Day Curriculum)

Curved beams; non-symmetrical bending of beams; short-center and shear stresses on thin sections; composite beams. Columns; energy absorption and resilience; inertial stresses impact loading; deflection of beams by energy methods. Bolted fastenings. *Prereq.* 02.415.

**02.417 Mechanical Design A** (4 cl., 4 q.h.) (Day Curriculum)

Failure criteria; properties and selection of materials; manufacturing considerations; stress concentrations; strength under combined stresses; theories of failure; impact; and fluctuating and repeated loads. Stresses; deformation and design of springs; screws, keys, pins, and interference fits; preloading of bolted joints; shafts and flywheels; friction brakes. *Prereq.* 02.415.

**02.418 Mechanical Design B** (2 cl., 2 q.h.) (Day Curriculum)

Lubrication and journal bearings; anti-friction bearings; stresses and power transmission of spur, bevel, and worm gear; screws for power transmission. *Prereq.* 02.417.

**02.421 Thermodynamics A** (4 cl., 4 q.h.) (Day Curriculum)

General theory of heat and matter; laws of thermodynamics; energy-transformation principles and availability of energy; properties and processes for pure substances and ideal gases. Thermodynamic properties and processes of liquids and vapors; tables and charts; mixtures of fluids; vapor cycles. *Prereq.* 11.318.

**02.422 Thermodynamics B** (4 cl., 4 q.h.) (Day Curriculum)

Theory of vapor engines and analysis of types of actual engines using compression of gases and vapors; internal combustion engines. Theory of gas and vapor flow through orifices and nozzles. Design and performance of steam and gas

turbines; spark-ignition and compression-ignition engine design and performance. Fan performance. *Prereq.* 02.421.

**02.423 Thermodynamics C** (4 cl., 4 q.h.) (Day Curriculum)

Air conditioning principles including psychometrics and heat pumps. Calculation of heating and cooling loads in accordance with A.S.H.R.A.E. practices. Principles of gas compression; analysis of vapor compression; refrigeration systems; low temperature refrigeration cycles; and absorption refrigeration systems. *Prereq.* 02.422.

**02.424 Thermodynamics D** (2 cl., 2 q.h.) (Day Curriculum)

The primary modes of heat transfer; thermal conductance/resistance concept; thermal-electrical analog; combined heat transfer mechanisms; basic equations of conduction; thermal conductivity; analytical solutions of various steady state conduction problems. *Prereq.* 02.422.

**02.425 Thermodynamics E** (4 cl., 4 q.h.) (Day Curriculum)

Dimensional analysis and similarity considerations; natural and forced convection; hydrodynamic and thermal boundary layers; log-mean temperatures differences; overall heat transfer coefficients; applications to heat exchangers. Black body radiation; Kirchoff's Law; emissivity and absorptivity; radiation between simple bodies. Graphical and numerical methods applied to steady state; conduction problems; radiation and convection effects; transient heat transfer; numerical methods applied to transient problems; heat transfer engineering problems. *Prereq.* 02.424.

**02.431 Materials A** (4 cl., 4 q.h.) (Day Curriculum)

Lectures on: fundamental metallic structures; general metallurgical information covering theoretical aspects of properties; testing and failure of metals; supplemented by visual aids. Lectures on: alloying and hardening of metals; refinement of metals; equilibrium diagrams; characteristics of engineering metals; principles of metal fabrication. *Prereq.* none.

**02.432 Materials B** (4 cl., 4 q.h.) (Day Curriculum)

Lectures on: inorganic materials, i.e., polymers, glasses, ceramics, cements, wood, and materials having important electrical and magnetic properties; also a summary of the most up-to-date applications for the fabrication and uses of both metals and non-metals. Structures of metals; imperfections; phase diagrams; effect of temperature on structure and properties of metals (annealing, recrystallization, recovery, precipitation, diffusion); strengthening mechanisms; mechanical properties of non-ferrous metals.

Laboratory: experiments in preparation of samples, selection, polishing, and etching; examination of non-ferrous metals; use of the microscope; linear analysis; construction of cooling curves; and simple binary phase diagrams. *Prereq.* 02.431.

**02.433 Applied Metallurgy** (4 cl., 4 q.h.) (Day Curriculum)

Lectures on: mechanical properties of ferrous metals, the iron carbon diagram, high temperature alloys, hardening methods, impact tests, effects of environment on metals; manufacturing processes, methods of fabrication; limitations

on the use of different materials and processes; casting, welding, cutting, drawing, powder metallurgy.

Laboratory: experiments on analysis of stress-strain diagrams of iron and steel, heat treatment of steels, surface corrosion, tempering and drawing, use of metallograph and analysis of the results. Experiments in cold rolling, swaging, drawing of non-ferrous metals and the analysis of the results. Tension, shear, fatigue, and machinability tests on ferrous metals. *Prereq.* 02.432.

**02.441 Fluid Mechanics A** (4 cl., 4 q.h.) (Day Curriculum)

Hydrostatics, principles governing fluids at rest; pressure measurement; hydrostatic forces on submerged areas and objects; simple dams; fluids in moving vessels; hoop tension. Fluid flow in pipes under pressure; fluid energy, power and friction loss; Bernoulli's Theorem; flow measurement. *Prereq.* 02.412.

**02.442 Fluid Mechanics B** (2 cl., 2 q.h.) (Day Curriculum)

Pipe networks and reservoir systems; flow in open channels; uniform flow; energy, friction loss, minor losses, velocity distribution, alternate stages of flow, critical flow; non-uniform flow; accelerated and retarded flow; hydraulic jump and waves. *Prereq.* 02.441.

**02.451 Mechanical Vibrations** (4 cl., 4 q.h.) (Day Curriculum)

Elements of vibrating systems, one degree of freedom (undamped free and forced vibration from Newton's law of motion and energy methods); natural frequencies; damped free and forced vibration; impedance and mobility; systems with more than one degree of freedom; influence coefficients, Lagrange's equations, generalized coordinates, vibration absorber. *Prereq.* 02.413.

**02.452 Experimental Stress Analysis** (4 cl., 4 q.h.) (Day Curriculum)

Theory and experimentation showing the application of extensometers and electrical strain gauges as transducers in the field of experimental stress and strain analysis. Theory and laboratory practice on photoelastic methods as applied to classical model analysis and modern coating analysis. *Prereq.* 02.415.

**02.461 Machine Shop** (2 cl., 3 lab., 4 q.h.) (Day Curriculum)

Introduction to study of machines for metal processing, cutting tools, and fluids; machinability; automatic machinery. *Prereq.* none.

**02.462 Mechanical Technology Laboratory I** (2½ lab., 2 q.h.) (Day Curriculum)

Experiments concerning compressible and incompressible fluids; instrumentation and measurement. *Prereq.* 02.441.

**02.463 Mechanical Technology Laboratory II** (2½ lab., 2 q.h.) (Day Curriculum)

Experiments concerning the physical properties of materials; experimental techniques. *Prereq.* 02.462, 02.415, 02.431.

**02.464 Mechanical Technology Laboratory III** (2½ lab., 2 q.h.) (Day Curriculum)

Experiments of a more advanced nature; introduction to the analog computer and experimental stress analysis. *Prereq.* 02.463.

**02.465 Heat Technology Laboratory I** (2½ lab., 2 q.h.) (Day Curriculum)

Experiments illustrating principles of thermodynamics and heat transfer; instrumentation and measurement. *Prereq.* 02.422 or concurrently.

**02.466 Heat Technology Laboratory II** (2½ lab., 2 q.h.) (Day Curriculum)  
Experiments on various types of heat engines; experimental techniques. *Prereq.* 02.465, 02.424, or concurrently.

**02.467 Project Laboratory** (6 cl., 4 q.h.) (Day Curriculum)  
A project of analytical, design, or experimental nature. Must be approved by student's faculty adviser. A formal report must be submitted. *Prereq.* 02.464, 02.466.

## ELECTRICAL ENGINEERING TECHNOLOGY

**03.301 Circuit Theory I** (2 cl., 2 q.h.)  
Ohm's law; Kirchoff's current and voltage laws; equivalent resistances and sources; mesh and nodal analysis; network theorems; and power relations, all with respect to direct currents. *Prereq.* 10.320 and 11.319.

**03.302 Circuit Theory II** (2 cl., 2 q.h.)  
Energy storage; singularity functions; response of R, L, and C elements to singularities. *Prereq.* 03.301, 10.322 concurrently.

**03.303 Circuit Theory III** (2 cl., 2 q.h.)  
Complex algebra; phasors; frequency domain; mutual inductance; transformers; steady-state a-c theory; driving point and transfer impedances; power and energy in a-c circuits. *Prereq.* 03.302.

**03.304 Circuit Theory IV** (2 cl., 2 q.h.)  
Laplace transforms; partial fraction expansion; Laplace transform techniques applied to the solution of RLC networks. *Prereq.* 03.303.

**03.305 Circuit Theory V** (2 cl., 2 q.h.)  
Consideration of balanced and unbalanced polyphase power circuits; symmetrical components; harmonic analysis. *Prereq.* 03.304.

**03.306 Electrical Measurements** (2 cl., 2 q.h.)  
Measurement of voltage, current, power, resistance, capacitance, inductance, impedance, frequency, etc.; direct and substitution measurements; evaluation of measured data—standard deviation and tolerance limits, instruments calibrations—effects of residual impedance. *Prereq.* 03.304, 10.323.

**03.311 Electronics I** (4 cl., 4 q.h.)  
Semiconductor diodes, power supplies, and filters; transistors as amplifying devices; graphical analysis of basic amplifiers, d-c and a-c load lines; transistor biasing techniques. *Prereq.* 03.303, 11.323 or 11.320.

**03.312 Electronics II** (4 cl., 4 q.h.)  
Small signal low frequency transistor models; a-c equivalent circuits, low frequency amplifier circuits; frequency effects in audio amplifiers; high frequency transistor model; voltage regulation. *Prereq.* 03.311.

**03.313 Electronics III (4 cl., 4 q.h.)**

Continuation of transistor circuits; untuned amplifiers, feedback amplifiers, low frequency large signal amplifiers; field effect transistor circuits and operational amplifiers. *Prereq.* 03.312.

**03.314 Pulse and Digital Circuits I (2 cl., 2 q.h.)**

Study of wave shaping circuitry including clippers, clampers, slicers, rise time, and sag; review of semiconductor diodes; study of the use of the junction transistor and field-effect transistor as a switch. Emphasis is placed on the non-linear aspects of transistors including transient switching characteristics. Review of semi-conductor diodes; RL and RC networks; introduction to pulse transformers; delay lines; and pulse forming networks. Study of the application of thyristors and unijunction transistors to switching circuits. *Prereq.* 03.313.

**03.315 Pulse and Digital Circuits II (2 cl., 2 q.h.)**

Numbering systems; binary notation and Boolean Algebra; analysis of integrated OR, AND, NOT, NAND, and NOR circuits including characteristics of various logic families; study of details of shift register and diode matrix. *Prereq.* 03.314.

**03.316 Pulse and Digital Circuits III (2 cl., 2 q.h.)**

Multivibrator circuits; bistable, astable, and monostable; study of counting and timing circuits; synchronization, voltage and current time-base generators; analysis of Schmitt trigger and voltage comparator circuits. *Prereq.* 03.315.

**03.317 Principles of Communication Systems I (4 cl., 4 q.h.)**

Analysis of RLC tuned circuits including inductively coupled circuits; a study of class-C tuned power amplifiers; analysis of RC, LC, and quartz crystal oscillators. *Prereq.* 03.313.

**03.318 Principles of Communication Systems II (4 cl., 4 q.h.)**

Introduction to noise and noise-figure; discussion of Fourier analysis; basic theory of amplitude, frequency, and phase-modulated systems is presented; basic concepts of transmitter and receiver circuits are detailed; comparison of noise susceptibility of the various systems is examined. *Prereq.* 03.317.

**03.319 Principles of Communication Systems III (4 cl., 4 q.h.)**

Introduction to pulse communication systems; basic discussion of sampling systems quantizers, encoders, modulators, transmission paths; presentation of channel capacity and decoding systems; error detection systems are compared. *Prereq.* 03.318.

**03.320 Electricity and Electronics I (2 cl., 2 q.h.) (not for electrical majors)**

Introduction to circuit analysis, resistive networks, periodic excitation function, steady-state a-c circuits. *Prereq.* 11.319.

**03.321 Electricity and Electronics II (2 cl., 2 q.h.)**

The physical foundation of electronics; physical operation of electronic devices; single-stage electronic circuits. *Prereq.* 03.320.



**03.322 Electricity and Electronics III** (2 cl., 2 q.h.)

Magnetic circuits and transformers; electron-mechanical energy conversion; d-c machines; a-c machines. *Prereq.* 03.321.

**03.323 Electronic Laboratory** (3 lab., 2 q.h.)

Experiments dealing with laboratory equipment (meters and oscilloscopes) techniques; junction and field-effect transistor characteristics; vacuum and semiconductor diodes; power supplies including the regulated type; silicon controlled rectifiers; resistance-coupled amplifiers using transistors, including feedback methods. *Prereq.* 03.312.

**03.324 Circuits Laboratory I** (3 lab., 2 q.h.)

Experimentation in electronic circuit theory utilizing various measurement techniques; instrumentation verification of circuit theorems; response of circuits to steps and impulses; oscilloscope theory and applications. *Prereq.* 03.306.

**03.325 Circuits Laboratory II** (3 lab., 2 q.h.)

Further experimentation in electrical circuits and measurement techniques. Experiments include non-linear devices, terminal characteristics of active devices, log modulus plots, network parameters and synthesis, Fourier analysis and synthesis. *Prereq.* 03.324.

**03.327 Advanced Electronic Laboratory I** (2½ lab., 2 q.h.)

Experiments dealing with oscilloscopes, class B audio amplifier with transistors, push-pull amplifiers, drivers, and distortion measurements. Double-tuned transformers, video amplifiers, audio frequency oscillators, and square-wave testing of audio amplifiers and the study of operational amplifiers. *Prereq.* 03.323, 03.313.

**03.328 Advanced Electronic Laboratory II** (2½ lab., 2 q.h.)

Experiments dealing with modulation of a class C amplifier, the diode detector, basic timing circuits, RF and crystal oscillators, networks in FM and television equipment, pulse and counter circuits and frequency dividers, sawtooth generators, astable (free-running) multivibrators, logic gates, frequency modulation detectors. *Prereq.* 03.327.

**03.329 Advanced Electronic Laboratory III** (2½ lab., 2 q.h.)

Spectral studies of FM and PM waves, amplitude limiters; the balance modulators and single sideband generators; binary adders, registers and counters; testing of a radio receiver; television receiver demonstration; analog computers; pulse forming and delay lines; slotted lines; a series of five microwave experiments; and a series of four digital experiments. *Prereq.* 03.328.

**03.331 Energy Conversion I** (2 cl., 2 q.h.)

Generalized theory of electromechanical energy conversion; two-winding transformer; general torque form applied to singly and doubly-excited rotating devices. *Prereq.* 03.303 and 10.323.

**03.332 Energy Conversion II** (2 cl., 2 q.h.)

Induction and synchronous machines; equivalent circuit models; steady-state operating modes; applications. *Prereq.* 03.331.

**03.333 Energy Conversion III** (2 cl., 2 q.h.)

D-c machine; transfer functions and flow chart analysis; Laplace transform techniques applied to the analysis of dynamic operating modes of rotating machines. *Prereq.* 03.332.

**03.334 Control Circuits** (2 cl., 2 q.h.).\*

Basic control design considerations; circuit transfer functions, time and frequency response relationships, bode diagrams; general feedback applications; stability and compensating techniques as related to more complex control systems. *Prereq.* 03.333.

**03.335 Control Circuits II** (2 cl., 2 q.h.).\*

Characteristics and construction of common control circuit devices; synchros, choppers, magnetic amplifiers, SCR's, control motors, gear trains, tachometers. *Prereq.* 03.334.

**03.336 Control Circuits III** (2 cl., 2 q.h.).\*

System open and closed loop transfer functions; stability, speed of response, and accuracy trade-offs; industrial uses including speed and voltage regulation, photoelectric, timing, sorting, and temperature control applications. *Prereq.* 03.335.

**03.337 Basic Power Systems I** (4 cl., 4 q.h.)

Consideration of power transmission lines; line constants; current, voltage, and power relations; introduction to electric-power distribution loads, feeders, and substations; application of matrices. *Prereq.* 03.304.

**03.338 Basic Power Systems II** (4 cl., 4 q.h.)

Consideration of symmetrical and unsymmetrical faults; protective devices—application and coordination; power flow in electric circuits; steady-state power limitations of systems; voltage regulation theory and application. *Prereq.* 03.337.

**03.339 Basic Power Systems III** (4 cl., 4 q.h.)

Computer applications to power systems with emphasis on load-flow studies; basic ideas of system planning, short-circuit studies and system stability. *Prereq.* 03.338.

**03.341 Power and Controls Laboratory I** (2½ lab., 2 q.h.).\*

Experimentation on measurement techniques; basic devices and circuits (including power circuits); transformers. *Prereq.* 03.333 and 03.334 or concurrently.

**03.342 Power and Controls Laboratory II** (2½ lab., 2 q.h.)\*\*

Experimentation on the steady-state and dynamic characteristics of rotating machines. *Prereq.* 03.341.

**03.343 Power and Controls Laboratory III** (2½ lab., 2 q.h.)\*\*

Experimentation on control devices systems including transient and steady-state responses, voltage and speed control systems, polyphase power rectifiers. *Prereq.* 03.342.

\*03.334, 335, 336 Control Circuits I, II, III may not be offered during the 1975-76 year.

\*\*03.341, 342, 343 Power and Controls Laboratory may not be offered during the 1975-76 year.

**03.344 Fundamental Electricity and Residential Power Circuits** (2 cl., 2 q.h.)

The fundamentals of electrical work, terminology, basic principles and the theory behind general practice in accordance with the National Electric Code are presented with an analysis of the actual wiring of residential buildings and farms. Wiring analysis of non-residential buildings such as churches, schools, stores, etc. for below 600 volts service is also included. *Prereq.* 10.329, 11.306.

**03.345 Industrial Power Circuits** (2 cl., 2 q.h.)

A survey of the use of sound engineering principles in the design of electric distribution systems which are applicable to most types and sizes of industrial plants. *Prereq.* 03.344.

**03.346 Electronics for Industry I** (2 cl., 2 q.h.)

Two-terminal devices; diode rectifiers and filters; transistors and vacuum tubes; D. C. biasing. *Prereq.* 03.302.

**03.347 Electronics for Industry II** (2 cl., 2 q.h.)

Small signal analysis; field effect transistors; multi-stage systems; decibel and frequency considerations; large signal amplifiers. *Prereq.* 03.346.

**03.348 Electronics for Industry III** (2 cl., 2 q.h.)

*PNPN* and other devices; differential and operational amplifiers; regulators and miscellaneous circuit applications; cathode ray oscilloscope. *Prereq.* 03.347.

**03.349 Advanced Electronic Laboratory IV** (2<sup>1/2</sup> lab., 2 q.h.)

Electronic Engineering exercises selected from the following topics: transistor amplifier design, operational amplifiers, analog computation, Fourier optics, acoustics, and microwaves. *Prereq.* 03.329 or equivalent.

**03.350 Advanced Electronic Laboratory V** (2<sup>1/2</sup> lab., 2 q.h.)

Design projects laboratory. Students will be directed in design of such projects as motor speed control, DC-DC converter, high current pulse amplifiers, etc. *Prereq.* 03.349.

**\*03.351 Bioelectronic Devices I** (2 cl., 2 q.h.)

Transducers, relating body functions and biomedical reactions to electronic signals; optics and optical components including mirror lenses, prisms, and gratings; defraction and refraction of light into spectral components and spectra. *Prereq.* 03.312.

**\*03.352 Bioelectronic Devices II** (2 cl., 2 q.h.)

Operational amplifier design and utilization, special power supply design; chromatography and design of chromatography systems; spectrophotometry radiation counting equipment and Ph measurement equipment related to chromatography; the electrocardiograph, electroencephalograph, and related physiological equipment will be discussed. *Prereq.* 03.351.

**\*03.353 Bioelectronic Devices III** (2 cl., 2 q.h.)

Blood pressure and flow measurement including ultrasonic devices, centrifugation, and ultracentrifugation equipment as well as amino acid analyzers; nerve-conduction apparatus and techniques. Professional specialists in the field will lecture on special topics. *Prereq.* 03.352.

\*Bioelectronic Devices (03.351, 03.352, 03.353) and the laboratory sequence (03.357, 03.358, 03.359) are offered every other year.

**\*03.357 Bioelectronic Laboratory I** (2 $\frac{1}{2}$  lab., 2 q.h.)

Experiments dealing with oscilloscopes, transistor amplifiers with negative feedback, directly coupled and difference amplifiers, clamping circuits, transients, logic circuits. Experiments in electronic circuitry including audio amplifiers, oscillators, and related circuits. *Prereq.* 03.312.

**\*03.358 Bioelectronic Laboratory II** (2 $\frac{1}{2}$  lab., 2 q.h.)

Experiments in optics covering lenses, mirrors, prisms, gratings, and spectra. Radiation experiments. Special design experiments on the optical bench related to spectrophotometry. Experiments with optical and electrophotical system. Design of detection and amplification monitoring systems. *Prereq.* 03.357.

**\*03.359 Bioelectronic Laboratory III** (2 $\frac{1}{2}$  lab., 2 q.h.)

Experiments and open discussion centered around bioelectronic systems including electrocardiogram, electroencephalograph, amino acid analyzers, pH measurement and titration apparatus, centrifuges, and ultracentrifuges, as well as radioactive sample changers. *Prereq.* 03.358.

**03.360 Introduction to Radar Systems** (4 cl., 4 q.h.)

Discussion of radar range equation; examination of CW, FM, MTI, Pulse-Doppler and monopulse systems; description of transmitter, antennas, and receivers; and a discussion of information extraction from typical radar waveforms. *Prereq.* 03.316 and 03.319.

**03.361 Transients in Linear Systems I** (2 cl., 2 q.h.)

Application of differential equations to the solutions of linear, time-invariant electrical networks; introduction to singularity functions, convolution, and time domain transient analysis. *Prereq.* 10.324 or concurrently, 03.304 or equivalent.

**03.362 Transients in Linear Systems II** (2 cl., 2 q.h.)

Network topology and duality; introduction to the methods of transformation calculus and complex frequency concepts; signal analysis in the frequency domain; Fourier series; Fourier and Laplace transform methods. *Prereq.* 10.325 or concurrently, 03.361.

**03.363 Transients in Linear Systems III** (2 cl., 2 q.h.)

A varied selection of circuit problems are solved using Laplace transforms and related theorems. *Prereq.* 03.362.

**03.364 Advanced Circuit Theory I** (2 cl., 2 q.h.)

Definitions and tests are lumped, linear, time-invariant systems; review of matrix algebra; general analysis of networks by loop current and node voltage variables using matrix techniques. *Prereq.* 03.363.

**03.365 Advanced Circuit Theory II** (2 cl., 2 q.h.)

A study of two-port networks using various parameter systems; S-plane analysis of system response; general filter analysis. *Prereq.* 03.364.

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\*Bioelectronic Devices (03.351, 03.352, 03.353) and the laboratory sequence (03.357, 03.358, 03.359) are offered every other year.

**03.366 Advanced Circuit Theory III** (2 cl., 2 q.h.)

Discussion of the necessary and sufficient conditions for the physical realization of impedance functions; Forster and Cauer forms; synthesis of filters. *Prereq.* 03.365.

**03.367 Advanced Pulse and Digital Circuits I** (2 cl., 2 q.h.)

Linear and non-linear pulse forming and processing techniques; design of gate and binary circuits for operation under severe environmental conditions. *Prereq.* 03.363.

**03.368 Advanced Pulse and Digital Circuits II** (2 cl., 2 q.h.)

Analysis of applications of existing integrated circuits. *Prereq.* 03.367.

**03.369 Advanced Pulse and Digital Circuits III** (2 cl., 2 q.h.)

Negative-impedance devices and their applications; linear voltage and current sweep circuits. *Prereq.* 03.368.

**03.371 Analog, Digital, and Hybrid Computers I** (2 cl., 2 q.h.)

Theory and operation of analog computers; amplitude scaling and time scaling on the analog computer, and application of the analog computer to the solution of linear and non-linear differential equations. *Prereq.* 10.325 and 03.303.

**03.372 Analog, Digital, and Hybrid Computers II** (2 cl., 2 q.h.)

Introduction to the field of digital computer design. Topics include general computer organization, number systems and number representations, design characteristics of major computer units. Boolean Algebra application to computer design. *Prereq.* 03.371.

**03.373 Analog, Digital, and Hybrid Computers III** (2 cl., 2 q.h.)

Survey of the present state-of-the-art hybrid computers. Problem areas unique to hybrid computers such as interface, analog-to-digital, and digital-to-analog conversion will also be discussed. Hybrid computer programming techniques. Direct digital process control computers. *Prereq.* 03.372.

**03.374 Digital Systems I** (2 cl., 2 q.h.)

Basic concepts of Boolean Algebra; switching components; review of number systems, codes, and negative number representation; analysis and synthesis of combinational circuits; examples of application. *Prereq.* 03.316.

**03.375 Digital Systems II** (2 cl., 2 q.h.)

Data acquisition techniques; analysis and synthesis of sequential circuits; examples of applications; analog and digital data reduction; real time data processing. *Prereq.* 03.374.

**03.376 Digital Systems III** (2 cl., 2 q.h.)

Residue number systems; threshold logic concepts; advanced digital system techniques with application to complex systems; data decommutation techniques relative to communications systems; aerospace telemetry systems. *Prereq.* 03.375.

**03.377 Control Systems I** (2 cl., 2 q.h.)

Analysis of linear servomechanisms under both transient and steady-state conditions; signal flow graphs. *Prereq.* 03.363.

**03.378 Control Systems II** (2 cl., 2 q.h.)

Laplace transforms used in the formulation of block diagrams and transfer functions; system stability; root locus techniques. *Prereq.* 03.377.

**03.379 Control Systems III** (2 cl., 2 q.h.)

Treatment of Nyquist criteria, and Bode diagram methods for systems evaluation. *Prereq.* 03.378.

**03.381 Linear Active Circuit Design I** (2 cl., 2 q.h.)

Review of large and small signal analysis for bipolar, unipolar, and integrated circuit devices; review of feedback principles as applied to discrete, hybrid, and integrated circuit amplifiers or regulators; signal flow graph analysis will be used to determine accuracy and sensitivity of feedback loops. *Prereq.* 03.313.

**03.382 Linear Active Circuit Design II** (2 cl., 2 q.h.)

Factors influencing high and low frequency response, and slew rate of both discrete and integrated circuit amplifiers; bode and gain-phase plots will be used to analyze stability of feedback loops. *Prereq.* 03.381.

**03.383 Linear Active Circuit Design III** (2 cl., 2 q.h.)

Active filter and oscillator design using both discrete and hybrid/integrated circuits; principles of low-noise video amplifiers; design of linear integrated electronic systems. *Prereq.* 03.382.

**03.384 Microwave Semiconductor Devices and Circuits I** (2 cl., 2 q.h.)

Provides basic understanding of the principles and design techniques for microwave circuits utilizing semiconductor devices; introduction to microwave theory and techniques; development of the Smith Chart for the graphical solution of microwave problems. *Prereq.* 03.304.

**03.385 Microwave Semiconductor Devices and Circuits II** (2 cl., 2 q.h.)

Introduction to the basic properties of semiconductors at microwave frequencies including analysis of bulk semiconductor effects and of junction phenomena. The course will analyze the physical properties and microwave characteristics of avalanche diodes, varactor diodes, tunnel diodes, PIN diodes, Gunn effect devices, and the microwave transistors. *Prereq.* 03.384.

**03.386 Microwave Semiconductor Devices and Circuits III** (2 cl., 2 q.h.)

Design and utilization of semiconductor devices in microwave circuits for microwave generation, amplification, frequency conversion, multiplication, and detection; introduction to the miniaturization of microwave circuits and the integration of microwave functions; the characteristics and limitations of the devices. *Prereq.* 03.385.

**03.387 Integrated Circuits I** (2 cl., 2 q.h.)

Linear integrated circuits; operational amplifiers-characteristics; selection cri-

teria; linear and nonlinear circuit applications; D/A and A/D converters. *Prereq.* 03.313.

**03.388 Integrated Circuits II** (2 cl., 2 q.h.)

Digital building blocks; truth tables and synthesis of digital logic; flip-flops and timing circuits; logic families and specifications; arithmetic operations. *Prereq.* 03.387.

**03.389 Integrated Circuits III** (2 cl., 2 q.h.)

Arithmetic operations concluded; counters; registers and decoding; memories-magnetic; TTL and MOS; theory applied to calculators; digital phase lock loops. *Prereq.* 03.388.

**03.391 Computer Technology Laboratory II** (2<sup>1</sup>/<sub>2</sub> lab., 2 q.h.)

Logic performing circuits; flip-flops; binary-counters; sampling gates; pulse and counter circuits and frequency dividers; a study of an analog computer. *Prereq.* 03.327.

**03.392 Computer Technology Laboratory III** (2<sup>1</sup>/<sub>2</sub> lab., 2 q.h.)

A continuation of 03.391 topics plus the use of a PDP 8-1 minicomputer. *Prereq.* 03.391.

**03.396 Basic Optics for Instrumentation** (2 cl., 2 q.h.)

Provides the necessary background for the two instrumentation courses listed below. Includes basic topics in geometrical and physical optics. No previous background in optics is assumed. Topics included are: Gaussian optics, fundamental laws of image formation, basic elements of optical design, scalar wave theory, interference and diffraction, polarization, basics of coherent (laser) and non-coherent optics. *Prereq.* 10.308.

**03.397 Optical Instrumentation I** (2 cl., 2 q.h.)

Treats the classical image-forming instruments (telescopes, microscopes, etc.) as components of optical systems. Includes magnification, aberrations, resolution criteria, photometry, compatibility of system components and optimization of systems. Topics in coherent imaging such as phase contrast and holography. *Prereq.* 03.396.

**03.398 Optical Instrumentation II** (2 cl., 2 q.h.)

The basic non-image forming systems used for analysis control and metrology. Includes spectroscopy, interferometry (classical and holographic), electron-ion optical, and X-ray systems. *Prereq.* 03.397.

**03.399 Fundamentals of Operational Amplifiers** (2 cl., 2 q.h.)

Emphasis on treating the amplifier as a black box. Covers gain, distortion, feedback, matching, offset, drift, and frequency response. A section on practical applications. *Prereq.* 03.312.

**03.401 Electric Devices and Systems I** (2 cl., 2 q.h.)

(See General Interest Courses, pages 162-163.)

**03.402 Electric Devices and Systems II** (2 cl., 4 q.h.)

(See General Interest Courses, pages 162-163.)

**03.410 Electrical Measurements** (4 cl., 4 q.h.) (Day Curriculum)  
Measurement of voltage, current, power, resistance, capacitance, inductance, impedance, frequency, etc.; direct and substitution measurements; evaluation of measured data—standard deviation and tolerance limits, instruments calibrations—effects of residual impedance. *Prereq.* 03.454.

**03.420 Electricity and Electronics I** (4 cl., 4 q.h.) (Day Curriculum)  
Introduction to circuit analysis. resistive networks, periodic excitation function, steady state a-c circuits; the physical foundations of electronics and the physical operation of electronic devices. *Prereq.* 11.319.

**03.421 Electricity and Electronics II** (4 cl., 4 q.h.) (Day Curriculum)  
Single-stage electronic circuits, magnetic circuits and transformers, electro mechanical energy conversion, d-c machines, a-c machines. *Prereq.* 03.420.

**03.440 Physical Electronics** (4 cl., 4 q.h.) (Day Curriculum)  
Electron Ballistics and applications; properties of atoms and electrons as related to conduction of electricity in solids; fundamentals of semiconductors, crystal diodes, and transistors; theory of field-effect transistors, integrated circuits, and photoelectric devices. *Prereq.* 11.420.

**03.430 Energy Conversion** (4 cl., 4 q.h.) (Day Curriculum)  
Generalized theory of rotating energy conversion devices; steady-state operation of the multiply-excited direct-current machine; control of speed; special machines; transformers; steady-state considerations of induction and synchronous machines; generalized machine and circuit model; Laplace transform techniques applied to the analysis of dynamic operating modes of rotating machines. *Prereq.* 03.452 and 10.422.

**03.437 Distributed Systems** (4 cl., 4 q.h.) (Day Curriculum)  
Radiation, transmission, and reception of electromagnetic waves; distributed-line constants and traveling waves of transmission lines; differential equations of the uniform line. *Prereq.* 10.422.

**03.451 Circuit Analysis I** (4 cl., 4 q.h.) (Day Curriculum)  
Ohm's law, Kirchoff's current and voltage laws, equivalent resistances and sources, mesh and modal analysis, network theorems, two-port networks and power relations—all with respect to direct currents; energy storage, singularity functions, response of R, L, and C elements to singularities. *Prereq.* 10.320, 11.319.

**03.452 Circuit Analysis II** (4 cl., 4 q.h.) (Day Curriculum)  
Complex algebra, phasors, frequency domain, mutual inductance, transformers, steady-state a-c theory, driving point and transfer impedances, power and energy in a-c circuits; Laplace transforms; partial fraction expansion; Laplace transform techniques applied to the solution of RLC networks. *Prereq.* 03.451.

**03.453 Circuits Analysis III** (4 cl., 4 q.h.) (Day Curriculum)  
Application of differential equations to the solutions of linear, time-invariant electrical networks; introduction to singularity functions, convolution, and time domain transient analysis; network topology and duality; introduction to the



methods of transformation calculus and complex frequency concepts. *Prereq.* 03.542.

**03.454 Circuits Analysis IV** (4 cl., 4 q.h.) (Day Curriculum)

Signal analysis in the frequency domain; Fourier series; Fourier and Laplace transform methods; a varied selection of circuit problems are solved using Laplace transforms and related theorems. *Prereq.* 03.453.

**03.460 Engineering Analysis I** (4 cl., 4 q.h.) (Day Curriculum)

Linear algebra and its application to circuit equations; solution of linear differential equations including an introduction to Laplace transforms. *Prereq.* 10.422 and 03.452.

**03.461 Engineering Analysis II** (4 cl., 4 q.h.) (Day Curriculum)

Complex variables and their relevance to an electrical engineering program. *Prereq.* 10.422.

**03.470 Digital Computers** (4 cl., 4 q.h.) (Day Curriculum)

Introduction to the field of digital computer design. Topics include general computer organization, number systems and number representations, design characteristics of major computer units, Boolean Algebra applications to computer design. *Prereq.* 03.313 or concurrently.

**03.477 Control Engineering I** (4 cl., 4 q.h.) (Day Curriculum)

Analysis of linear servomechanisms under both transient and steady-state conditions; signal flow graphs; Laplace transforms used in the formulation of block diagrams and transfer function. *Prereq.* 03.454 and 10.422.

**03.478 Control Engineering II** (4 cl., 4 q.h.) (Day Curriculum)

System stability; root locus techniques; treatment of Nyquist criteria and Bode diagram methods for systems evaluation. *Prereq.* 03.477.

**03.490 Optical Instrumentation** (4 cl., 4 q.h.) (Day Curriculum)

Telescopes, microscopes, etc., as optical system components. Includes magnification, aberrations, resolution criteria, photometry. Compatibility of system components and optimization of systems. The basic non-image forming systems used for analysis control and metrology. *Prereq.* 10.308 and 11.319.

## CHEMICAL ENGINEERING TECHNOLOGY

**04.381 Nuclear Technology I** (2 cl., 2 q.h.)

Atomic and nuclear structure; discovery and nature of radioactivity; nuclear instrumentation for particle detection, monitoring, and experimentation; supplementary laboratory experiments. *Prereq.* 10.323 and 11.319.

**04.382 Nuclear Technology II** (2 cl., 2 q.h.)

Nuclear reactions and energy; induced nuclear transformations; neutron properties; radiological safety—the hazards, problems, and protection; applications of radionuclides; supplementary laboratory experiments. *Prereq.* 04.381.

**04.383 Nuclear Technology III** (2 cl., 2 q.h.)

The fission process and its applications; nuclear reactors—their classification, design and application; nuclear fuel processing; radioactive waste disposal; supplementary laboratory experiments. *Prereq.* 04.382.

**04.481 Nuclear Technology** (4 cl., 4 q.h.)

(Day Curriculum)

Atomic and nuclear structure; discovery and nature of radioactivity; nuclear reactions and energy; induced nuclear transformations; neutron properties; nuclear instrumentation for particle detection, monitoring, and experimentation; the fission process and its applications; nuclear reactors—their classification, design, and application; supplementary laboratory experiments. *Prereq.* 10.422 and 11.319.

## ENGINEERING GRAPHICS AND COMPUTATION

**09.307 Electrical and Electronic Graphics I** (2 cl., 2 q.h.)

Instrument techniques; principles of projection, drawing, reading, and interpretation of multiview drawings; isometric, oblique, pictorial representations; auxiliary views and sections. *Prereq.* none.

**09.308 Electrical and Electronic Graphics II** (2 cl., 2 q.h.)

Introduction to electronic graphics, including symbols, schematics, block and logic diagrams, production and cable drawings, military standards. *Prereq.* 09.307.

**09.309 Electrical and Electronic Graphics III** (2 cl., 2 q.h.)

A study of single- and double-sided printed circuit layout, integrated circuits, electro-mechanical designs, wiring, and interconnection diagrams; graphical data presentation. *Prereq.* 09.308.

**09.311 Engineering Graphics I** (2 cl., 2 q.h.)

Introduction to engineering drawing, geometric construction, charts and graphs, orthographic projection through auxiliary views. *Prereq.* none.

**09.312 Engineering Graphics II** (2 cl., 2 q.h.)

Detail drawing, including intersections and development; reading of multiview drawings; pictorial representation. *Prereq.* 09.311.

**09.313 Engineering Graphics III** (2 cl., 2 q.h.)

Manufacturing processes and dimensioning; topographical; earth work; drawing analysis of assemblies; case studies in engineering design. *Prereq.* 09.312.

**09.314 Engineering Design I (Kinematics)** (1 cl., 2 lab., 2 q.h.)

Translatory and rotary motion involving basic mechanisms through graphical vector and mathematical analysis of displacement, velocity, and acceleration; some redesign of existing mechanisms; simple, compound, reverted, and epicyclic gear trains. *Prereq.* 09.313, 11.317.

**09.315 Engineering Design II** (1 cl., 2 lab., 2 q.h.)

Drawings and specifications for the production and precision machining of castings, forging, weldments, etc.; discussion of design components. *Prereq.* 09.314.

**09.316 Engineering Design III** (1 cl., 2 lab., 2 q.h.)

Introduction to design through graphical analysis of cam and follower motions and other mechanisms; creativity and design processes through case studies and original projects requiring oral presentation of student's involvement in both synthesis and innovative activities. *Prereq.* 09.315.

**09.351 Principles of Computer Programming I** (2 cl., 2 q.h.)\*

Rules for forming simple FORTRAN programs. Students write and run programs to compute Fibonacci sequences, averages, kinematic displacements, and maxima and minima in both discrete and continuous cases; batch programming in FORTRAN IV; introduction to computer organization and machine language. *Prereq.* 10.308.

**09.352 Principles of Computer Programming II** (2 cl., 2 q.h.)\*

Extended capabilities of the FORTRAN language, including DO loops, subscripted variables, and alphanumeric arrays. Students write and run application programs for printer plotting, sorting, matrix algebra, and approximations. Batch programming in FORTRAN IV. *Prereq.* 09.351.

**09.353 Principles of Computer Programming III** (2 cl., 2 q.h.)\*

Subroutine and function subprograms; use of Scientific Subroutine Package with programming applications in probability, solution of simultaneous linear equations, root finding and quadrature; introduction to use of plotter; batch programming in FORTRAN IV. *Prereq.* 09.352.

**09.354 Computer Systems I (Advanced Fortran Techniques)** (2 cl., 2 q.h.)

Data storage and retrieval techniques in Fortran; tapes, discs, drums, and methods for computer files; hierarchical data and file structures; file manipulation and access methods. *Prereq.* 09.353.

**09.355 Computer Systems II (Symbolic Programming Language)** (2 cl., 2 q.h.)

Internal data representation and manipulation; computer instructions language; symbolic languages and assemblers. *Prereq.* 09.354.

**09.356 Computer Systems III (Operating Systems)** (2 cl., 2 q.h.)

Batch processing; time sharing; mixed systems; and multiprogramming; North-eastern University's operating system-MASTER.

**09.357 Computer Aided Design I (Computer Graphics)** (2 cl., 2 q.h.)

Computer graphics programming, using the computer to draw two- and three-dimensional shapes; character generation and manipulation methods; Implementation on Northeastern's calcomp plotter. *Prereq.* 09.353.

**09.358 Computer Aided Design II (Problem Oriented Languages)** (2 cl., 2 q.h.)

Discussion of popular languages; user oriented requirements; input algorithms; command structure; design of a POL system. *Prereq.* 09.353.

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\*NOTE Students at suburban campuses will find it necessary periodically to come to the Boston Campus Computation Center to run their homework problems.

- 09.359 Computer Aided Design III** (Simulation and Mathematical Models) (2 cl., 2 q.h.)  
Random numbers programs to predict the outcome of probabilistic systems; Computer models of deterministic systems. *Prereq.* 09.353.
- 09.361 Computer Controlled Systems I** (2 cl., 2 q.h.)  
Introduction to minicomputers; minicomputers organization and logical components; basic machine language programming. *Prereq.* 09.353.
- 09.362 Computer Controlled Systems II** (2 cl., 2 q.h.)  
Extended programming of minicomputers; the use of a minicomputer as an element in process control; analysis of open and closed loop systems. *Prereq.* 09.361.
- 09.363 Computer Controlled Systems III** (2 cl., 2 q.h.)  
Specification of computer elements for a control system; design and synthesis of a computer-controlled system to meet process requirements. *Prereq.* 09.362.
- 09.401 Interpretation of Industrial Drawings** (2 cl., 2 q.h.)  
(See General Interest Courses, pages 162-163.)
- 09.421 Principles of Computer Programming I** (2 cl., 2 q.h.) (Day Curriculum)  
Rules for forming simple FORTRAN programs; basic input/output techniques; FORMAT control; algorithms for solving simple scientific problems; computing large sums; maxima and minima in both discrete and continuous cases. *Prereq.* 10.308 or concurrently.
- 09.422 Principles of Computer Programming II** (2 cl., 2 q.h.) (Day Curriculum)  
Extended capabilities of the FORTRAN language; manipulation of vectors and arrays; subroutine and function subprogramming; continued applications of computers, sorting, merging, root determination; A-Format. *Prereq.* 09.421.
- 09.423 Principles of Computer Programming III** (2 cl., 2 q.h.) (Day Curriculum)  
Use of scientific subroutines, simulation, random numbers; introduction to numerical methods (solution of simultaneous equations, quadrature, derivatives); use of plotter language; display of information. *Prereq.* 09.422.
- 09.461 Engineering Design Graphics I** (2 cl., 2 q.h.) (Day Curriculum)  
Introduction to engineering drawing; orthographic projection and primary auxiliary views; reading and interpreting of multiview drawings; isometric and oblique pictorial representation. *Prereq.* none.
- 09.462 Engineering Design Graphics II** (2 cl., 2 q.h.) (Day Curriculum)  
Emphasis on engineering drawings required to support engineering design, including standard conventions, dimensioning, and basic production processes; shop detail drawings are covered; exercise in design processes is given through selected projects and case studies. *Prereq.* 09.461.
- 09.463 Engineering Design Graphics III** (2 cl., 2 q.h.) (Day Curriculum)  
Greater involvement in design by examination of many commonly used components; case studies of large systems discussed in class; advanced design projects assigned. *Prereq.* 09.462.

**09.464 Engineering Design Graphics IV** (4 cl., 4 q.h.) (Day Curriculum)  
 Graphical analysis of kinematic elements; displacement, locus generators, velocity vectors, and sliding motion; simple, compound, and reverted gear trains; acceleration analysis of mechanisms such as cams and linkages; functions, scales and nomographs; introduction to self-correcting (feedback) systems.  
*Prereq.* 09.463.

## MATHEMATICS

**10.301 Introduction to Mathematics I** (4 cl., non-credit)  
 A comprehensive review of high school algebra including first-degree equations, factoring, fractions, fractional equations, ratio and proportion, word problems, and concepts of plane geometry. *Prereq.* none.

**10.302 Introduction to Mathematics II** (4 cl., non-credit)  
 Algebraic operations with complex fractions, mixed expressions, square roots, radicals, quadratic equations; simultaneous equations, graphs and fractional zero and negative exponents; the geometry of the right triangle, areas of polygons, circles, and loci problems; basic slide rule operation. *Prereq.* 10.301.

**10.303 Introduction to Mathematics** (Day Curriculum)  
 An accelerated combination of 10.301 and 10.302.

**10.307 College Algebra and Trigonometry I** (4 cl., 4 q.h.)  
 Fundamental algebraic operations; complex numbers; radicals and exponents; functions; linear and quadratic equations; irrational equations; inequalities; variation; roots of polynomial equations. *Prereq.* Math. Placement Test or 10.302.

**10.308 College Algebra and Trigonometry II** (4 cl., 4 q.h.)  
 Logarithms; trigonometric functions of angles in degrees and radians; trigonometric identities and equations; right triangles; oblique triangles; complex numbers in trigonometric form; systems of equations; determinants. *Prereq.* 10.307.

**10.316 Probability and Statistics I** (2 cl., 2 q.h.)  
 Basic tools, e.g., sets, permutations, and combinations; probability and applications. *Prereq.* 10.308, or 10.329 or 10.335.

**10.317 Probability and Statistics II** (2 cl., 2 q.h.)  
 Descriptive statistics; frequency distributions and probability density functions; normal and other distributions. *Prereq.* 10.316.

**10.318 Probability and Statistics III** (2 cl., 2 q.h.)  
 Bivariate distributions; correlation; statistical inference and estimation; regression. *Prereq.* 10.317.

**10.320 Calculus I** (4 cl., 4 q.h.)  
 Plane Analytic Geometry; differentiation of algebraic functions; rate, motion, maximum and minimum problems; derivatives of higher order; curve sketching; basics in functions, limits, and continuity. *Prereq.* 10.308 or 10.329.

**10.321 Calculus II** (2 cl., 2 q.h.)

Integration of algebraic functions; integration and differentiation of logarithmic, exponential, and trigonometric terms; calculations of areas, volumes, and length of arc by definite integrals. *Prereq.* 10.320.

**10.322 Calculus III** (2 cl., 2 q.h.)

Differentiation and integration of inverse trigonometric functions; integration by parts, substitution, and tables; the Trapezoidal and Simpson Rules; the application of the differential and integral calculus to the Polar Coordinate System; indeterminate forms. *Prereq.* 10.321.

**10.323 Calculus IV** (2 cl., 2 q.h.)

Vectors in the plane; vectors in three-dimensional space; functions of more than one variable; partial differentiation; multiple integration; infinite series; Taylor's and Maclaurin's Formula. *Prereq.* 10.322.

**10.324 Differential Equations I** (2 cl., 2 q.h.)

Vector analysis; matrices and linear algebra. *Prereq.* 10.323.

**10.325 Differential Equations II** (2 cl., 2 q.h.)

Ordinary differential equations—standard types of the first order; linear differential equations, especially with constant coefficients; variation of parameters. *Prereq.* 10.324.

**10.326 Differential Equations III** (2 cl., 2 q.h.)

Series solutions of differential equations; Laplace transforms; Fourier series; and orthogonal functions. *Prereq.* 10.325.

**10.327 Mathematics I** (2 cl., 2 q.h.)

Methods and applications of algebra; graphical techniques. *Prereq.* *Math. Placement Test*, 10.331, or 10.302.

**10.328 Mathematics II** (2 cl., 2 q.h.)

Linear and quadratic equations; exponents and radicals; variation. *Prereq.* 10.327.

**10.329 Mathematics III** (2 cl., 2 q.h.)

Introductory topics of probability and statistics; logarithms and applications; mathematics of finance. *Prereq.* 10.328.

**10.330 Basic Mathematics I** (2 cl., non-credit)

A review of elementary algebra; algebraic expressions and operations, equations, word problems. *Prereq.* none.

**10.331 Basic Mathematics II** (2 cl., non-credit)

Further review; operations with polynomials, factoring, fractional expressions, word problems. *Prereq.* 10.330.

**10.332 Mathematics for Business Management I** (2 cl., 2 q.h.)

Topics of mathematics applicable to business management; logic, set theory, probability and its uses in decision-making under uncertainty. *Prereq.* 10.329 or *equiv.*

**10.333 Mathematics for Business Management II** (2 cl., 2 q.h.)

Statistical methods; mathematics of finance; introduction to vector and matrix algebra. *Prereq.* 10.332 or *equiv.*

**10.334 Mathematics for Business Management III** (2 cl., 2 q.h.)

Linear programming and optimization techniques; applications of matrix algebra; game theory. *Prereq.* 10.33 or *equiv.*

**10.351 Advanced Mathematics I (Numerical Analysis)** (2 cl., 2 q.h.)

Basic methods of numerical analysis—roots by iteration; approximating polynomials and interpolation; least squares fitting; numerical integration; approximate solution of ordinary differential equations—problems employing the electronic computer. *Prereq.* 09.353 and 10.326.

**10.352 Advanced Mathematics II** (2 cl., 2 q.h.)

Introduction to partial differential equations, boundary-value problems, Sturm-Liouville systems. *Prereq.* 10.351.

**10.353 Advanced Mathematics III** (2 cl., 2 q.h.)

Special topics in analysis. *Prereq.* 10.352.

**10.361 Modern Algebra I** (2 cl., 2 q.h.)

Sets; binary operations; mappings; rings, integers, fields; rationals; reals, bases for computer applications; Euclidean algorithm; primes. *Prereq.* 10.308, 10.329 or 10.335.

**10.362 Modern Algebra II** (2 cl., 2 q.h.)

Field of complex number; groups; subgroups; polynomial rings; homomorphisms; isomorphisms; ideals. *Prereq.* 10.361.

**10.363 Modern Algebra III** (2 cl., 2 q.h.)

Vector spaces; linear transformations; dependence, independence; dimension applications to engineering, science, and business. *Prereq.* 10.362.

**10.364 Modern Applied Algebra** (4 cl., 4 q.h.)

Introduction to the language of abstract algebra to the following topics: graphs, finite state machines, programming languages, Boolean Algebra, lattices, coding for communication channels, and radar; look at algebraic theory of linear systems. *Prereq.* 10.361, 10.362 and 10.363.

**10.401 Foundations of Mathematics I** (2 cl., 2 q.h.)

(See General Interest Courses, pages 162-163.)

**10.402 Foundations of Mathematics II** (2 cl., 2 q.h.)

(See General Interest Courses, pages 162-163.)

**10.403 Foundations of Mathematics III** (2 cl., 2 q.h.)

(See General Interest Courses, pages 162-163.)

**10.421 Calculus—A** (4 cl., 4 q.h.)

(Day Curriculum)

Applications of derivatives to curve-sketching; antidifferentiation; the definite in-

tegral, with applications; calculus of non-algebraic functions—logarithmic, exponential, and trigonometric; calculus of inverse trigonometric functions; techniques of integration; polar coordinates; the conic sections; vectors in a plane; indeterminate forms; L'Hospital's rule. *Prereq.* 10.320.

**10.422 Calculus—B** (3 cl., 4 q.h.) (Day Curriculum)

Calculus of functions of several variables; partial differentiation; multiple integrals; infinite series; vector analysis; matrices; and linear algebra. *Prereq.* 10.421.

**10.423 Differential Equations** (4 cl., 4 q.h.) (Day Curriculum)

Ordinary differential equations—standard types of the first order; linear differential equations, especially with constant coefficients; Laplace transforms; series solutions of differential equations; Fourier series; and orthogonal functions. *Prereq.* 10.422.

## PHYSICS

*Courses marked \* not available in every curriculum. See curricula in Programs of Instruction section for applicable sequence, pp. 67-106.*

**11.301 Introductory Physics I** (4 cl., non-credit)

A survey of physical principles and theories related to field of mechanics. Emphasis is placed upon the solution of applied problems. *Prereq.* none.

**11.302 Introductory Physics II** (4 cl., non-credit)

Extension of principles in mechanics and introduction of concepts in heat, sound, light, electricity, and magnetism. *Prereq.* 11.301.

**\*11.304 General Physics I** (2 cl., 2 q.h.)

Survey of Newtonian mechanics; kinematics and dynamics of particle motion; projectile and circular motion; rotational motion; conservation laws of energy and momentum. *Prereq.* 10.327 or concurrently.

**\*11.305 General Physics II** (2 cl., 2 q.h.)

Temperature; heat energy; mechanical equivalent of heat; wave motion; sound; Doppler's effect; properties of light; simple optical systems. *Prereq.* 11.304.

**\*11.306 General Physics III** (2 cl., 2 q.h.)

Fundamentals of electricity and magnetism; fields; potential; electric current; inductance; capacitance; electromagnetism; a-c and d-c series circuits. *Prereq.* 11.305.

**11.317 Physics I (Mechanics)** (4 cl., 4 q.h.)

Kinematics and dynamics of particle motion; Newton's laws; projectile and circular motion; conservation laws for momentum and energy; rotational motion; simple harmonic motion. *Prereq.* 10.307 or concurrently.

**11.318 Physics II (Wave Motion, Sound, Heat)** (4 cl., 4 q.h.)

Wave motion; intensity; interference phenomena; Doppler effect; vibrating sys-



tems; temperature; heat; change of state; heat transfer; kinetic theory of gases; general gas laws; thermodynamics. *Prereq.* 11.317.

**11.319 Physics III (Electricity, Magnetism, Light)** (4 cl., 4 q.h.)

Electrostatics; magnetism; magnetic induction; induced currents; direct and alternating current circuits; properties of light; reflection; refraction; dispersion; optical systems; diffraction; polarization. *Prereq.* 11.318.

**11.320 Semiconductor Physics & Devices** (4 cl., 4 q.h.)

Properties of atoms and electrons as related to conduction of electricity in solids; energy-band of semiconductors; Nature of pn junctions; diode equation; electron and holes; junction, light-emitting, and tunnel diodes; diode rectifiers; junction and field-effect transistors; integrated circuits. (This is a combination of 11.322 and 11.323.) *Prereq.* 11.316 or 11.319.

**11.321 Wave Phenomena** (2 cl., 2 q.h.)

Application of fundamental principles of waves to electromagnetic radiation; waves on transmission lines; selected topics in antennas and wave guides. *Prereq.* 11.319 or 11.316.

**11.322 Semiconductor Physics I** (2 cl., 2 q.h.)

Properties of atoms and electrons as related to conduction of electricity in solids; energy-band of semiconductors; nature of pn junctions; diode equation; electron and holes.

**11.323 Semiconductor Devices II** (2 cl., 2 q.h.)

Junction, light-emitting, and tunnel diodes; diode rectifiers; junction and field-effect transistors; integrated circuits.

**11.324 Introductory Survey of Lasers** (2 cl., 2 q.h.)

Physical principles and technology will be emphasized. Course will include a review of the fundamental concepts of light and spectroscopy, the basic theory of lasers, studies of solid state; atomic, ionic and molecular gas; organic dye; and semiconductor lasers. Related optics and detection will be discussed. *Prereq.* 11.319.

**11.331 Modern Physics I** (2, cl. 2 q.h.)

Introduction to theory of relativity; particle properties of waves; wave properties of particles; atomic structure; Bohr model of the atom. *Prereq.* 11.306 or 11.319.

**11.332 Modern Physics II** (2 cl., 2 q.h.)

Quantum mechanics; electron spin; atomic spectra; complex atoms; solid state physics; lasers. *Prereq.* 11.331.

**11.333 Modern Physics III** (2 cl., 2 q.h.)

Atomic nucleus; radioactive decay; thermonuclear energy; nuclear reactions; elementary particles. *Prereq.* 11.332.

**11.373 Physics Laboratory I** (2½ cl., 2 q.h.)

First quarter of a two-quarter physics laboratory. Experiments in mechanics, fluid dynamics, and gas laws. *Prereq.* 11.305 or 11.318, or concurrently.

**11.374 Physics Laboratory II** (2½ cl., 2 q.h.)

A continuation of 11.373. Experiments in wave motion, optics, and electrical circuits.

**11.401 Man's Physical Environment I** (2 cl., 2 q.h.)

(See General Interest Courses, pages 162-163.)

**11.402 Man's Physical Environment II** (2 cl., 2 q.h.)

(See General Interest Courses, pages 162-163.)

**11.420 Physics IV** (4 cl., 4 q.h.)

(Day Curriculum)

Application of fundamental principles of waves to electromagnetic radiation; waves on transmission lines; further study of wave motion topics from 11.318. *Prereq.* 11.319.

## CHEMISTRY

*Students wishing to elect other chemistry courses should refer to the University College Catalog and petition for approval by the Academic Standing Committee of Lincoln College.*

**12.501 Introductory Chemistry I** (4 cl., non-credit)

A non-mathematical approach to the concepts of chemistry including matter, elements and compounds, chemical bonding, chemical equations. *Prereq.* none.

**12.502 Introductory Chemistry II** (4 cl., non-credit)

A continuation of 12.501, including periodic system, forms of energy, oxidation-reduction, solutions, chemical and ionic equilibrium, nuclear reactions, and a brief introduction to organic chemistry. *Prereq.* 12.501 or equiv.

**12.507 Modern Chemistry I (Intro. to Inorganic Chemistry)** (2 cl., 2 q.h.)

Fundamental ideas of matter and energy, chemical bonding, chemical energy, water and solutions, colloids, ionic reactions, oxidation and reduction, acidity, radioactivity, all discussed from the viewpoint of recent developments. *Prereq.* 10.327 or concurrently.

**12.508 Modern Chemistry II (Intro. to Organic Chemistry)** (2 cl., 2 q.h.)

Classes of organic compounds, including hydrocarbons, alcohols, ethers, aldehydes, ketones, carboxylic acids, esters, amines and amides; carbohydrates, including the relationship with modern biology. *Prereq.* 12.507 or equiv.

**12.509 Modern Chemistry III (Intro. to the Chemistry of Living Bodies)**

(2 cl., 2 q.h.)

Includes fats, proteins, enzymes, chemistry of digestion, and the chemical reactions characteristic of body fluids. *Prereq.* 12.508 or equiv.

**12.515 Biochemistry I** (2 cl., 2 q.h.)

The first quarter of a three-quarter course sequence. The sequence will cover introduction to the biochemistry of the cell, including the occurrence, chem-

istry, and metabolism of carbohydrates, lipids, proteins, and nucleic acids. *Prereq.* 12.533 or *equiv.*

**12.516 Biochemistry II** (2 cl., 2 q.h.)

A continuation of 12.515. *Prereq.* 12.515.

**12.517 Biochemistry III** (2 cl., 2 q.h.)

A continuation of 12.516. *Prereq.* 12.516.

**12.521 Analytical Chemistry I** (2 cl., 2 q.h.)

Analytical procedures and techniques; the principles of solution chemistry, ionic equilibria, and oxidation potentials applied to solving problems in chemical analysis. *Prereq.* 12.546 and 12.549 or *equiv.*

**12.522 Analytical Chemistry II** (2 cl., 2 q.h.)

Principles and practice of gravimetric and titrimetric methods of analysis. *Prereq.* 12.521.

**12.523 Analytical Chemistry III** (2 cl., 2 q.h.)

Theory of spectrophotometry, chromatography, and selected electro-analytical methods. *Prereq.* 12.522.

**12.524 Analytical Chemistry Laboratory I** ( 3 lab., 2 q.h.) (Laboratory Fee)

Qualitative analysis; separations by chemical means, chemical tests, and spot tests for inorganic ions in solution. *Prereq.* 12.521 or *concurrently or equiv.*

**12.525 Analytical Chemistry Laboratory II** (3 lab., 2 q.h.) (Laboratory Fee)

Chemical methods of quantitative analysis; procedures and techniques of gravimetric and volumetric methods of chemical analysis. *Prereq.* 12.522 or *concurrently or equiv.*

**12.526 Analytical Chemistry Laboratory III** (3 lab., 2 q.h.) (Laboratory Fee)

Instrumental methods of analysis; instruments and procedures for electro-metric and optical methods of chemical analysis. *Prereq.* 12.525 and 12.523 or *concurrently or equiv.*

**12.531 Organic Chemistry I** (2 cl., 2 q.h.)

Nature of carbon in organic compounds; general principles of structure, nomenclature, preparation, uses, and reactions, of aliphatic hydrocarbons: alkanes, alkenes, alkynes, dienes, cycloalkanes; position and geometric isomerism; introduction to free radical and ionic mechanisms of reactions. *Prereq.* 12.546 and 12.549 or *equiv.*

**12.532 Organic Chemistry II** (2 cl., 2 q.h.)

Structure of benzene, electrophilic aromatic substitution reactions; general principles of structure, nomenclature, preparation, uses and reactions of the various types of organic compounds, including: alcohols, alkyl and aryl halides, ethers and epoxides and carboxylic acids; optical isomerism and introductory chemical kinetics will be discussed. *Prereq.* 12.531 or *equiv.*

**12.533 Organic Chemistry III** (2 cl., 2 q.h.)

A continuation of 12.532 with emphasis on the application of chemical inter-conversions to synthetic problems; functional derivatives of carboxylic acids, sulfonic acids and their derivatives, amines, diazonium compounds, phenols, aldehydes and ketones. *Prereq. 12.532 or equiv.*

**12.534 Organic Chemistry Laboratory I** (3 lab., 2 q.h.) (Laboratory Fee)

Coordinated with the lecture course, Organic Chemistry I, and deals with the preparation and properties of compounds discussed. *Prereq. 12.546 or equivalent and 12.531 or concurrently, or equiv.*

**12.535 Organic Chemistry Laboratory II** (3 lab., 2 q.h.) (Laboratory Fee)

Coordinated with the lecture course, Organic Chemistry II, and deals with the preparation and properties of compounds discussed. *Prereq. 12.534 or equiv.*

**12.536 Organic Chemistry Laboratory III** (3 lab., 2 q.h.) (Laboratory Fee)

Coordinated with the lecture course, Organic Chemistry III, and deals with the preparation and properties of compounds discussed. *Prereq. 12.535 or equiv.*

**12.541 Physical Chemistry I** (2 cl., 2 q.h.)

The three states of matter, atomic and molecular forces, physical properties and molecular structure; heat, work and heat capacity; thermochemistry. *Prereq. 10.323, 11.306, and 12.546 plus 12.549 or equiv.*

**12.542 Physical Chemistry II** (2 cl., 2 q.h.)

Thermodynamics, solutions, chemical equilibria, phase diagrams, and chemical kinetics. *Prereq. 12.541 or equiv.*

**12.543 Physical Chemistry III** (2 cl., 2 q.h.)

Electrical conductance, electromotive force, ionic equilibria, colloids, quantum theory, and photochemistry. *Prereq. 12.542 or equiv.*

**12.544 General Chemistry I** (2 cl., 2 q.h.)

Fundamental concepts; symbols, formulas, and equations; atomic structure and Periodic Law; chemical bonding; oxygen, ozone, and hydrogen; the gaseous state and gram mole volume; the liquid and solid states; water and hydrogen peroxide. *Prereq. 10.307 or 10.327 or concurrently or equiv. (Not open to students with credit for 12.311 or 12.314.)*

**12.545 General Chemistry II** (2 cl., 2 q.h.)

Solutions, solutions of electrolytes, colloids, oxidation and reduction reactions, periodic properties, halogens, chemical equilibrium, electrochemistry; acids, bases, and salts; sulfur family. *Prereq. 12.544 or equiv. (Not open to students with credit for 12.512 or 12.515.)*

**12.546 General Chemistry III** (2 cl., 2 q.h.)

Ionic equilibrium and weak electrolytes; solubility product principle, hydrolysis; nitrogen, phosphorous, and their compounds; boron, silicon, and their compounds; alkali and alkaline earth metals, metals of groups III and IV; nuclear chemistry; carbon and its compounds; biochemistry. *Prereq. 12.545 or equiv. (Not open to those students with credit for 12.513 or 12.516.)*

**12.547 General Chemistry Laboratory I** (2 lab., 1 q.h.) (Laboratory Fee)  
Coordinated with the lecture course, General Chemistry I, and deals with the preparation and properties of elements and compounds discussed. *Prereq.* 12.544 or concurrently or equiv. (Not open to those students with credit for 12.514.)

**12.548 General Chemistry Laboratory II** (2 lab., 1 q.h.) (Laboratory Fee)  
Coordinated with the lecture course, General Chemistry II, and deals with the preparation and properties of elements and compounds discussed. *Prereq.* 12.547 or equiv. (Not open to those students with credit for 12.315.)

**12.549 General Chemistry Laboratory III** (2 lab., 1 q.h.) (Laboratory Fee)  
Qualitative analysis experiments, including unknown solutions. *Prereq.* 12.548 or equiv. (Not open to those students with credit for 12.316.)

**12.551 Instrumental Analysis I** (formerly Instrumental & Radiochemistry I)  
(2 cl., 2 q.h.)  
Basic theory and instruments used in electrochemical analysis. Course includes such topics as electrode and cell potentials, potentiometric titrations, direct potentiometry (pH meters and specific ion electrodes), coulometry, polarography, amperometry, electrogravimetry, and conductivity. *Prereq.* 12.523 or equiv.

**12.552 Instrumental Analysis II** (formerly Instrumental & Radiochemistry II)  
(2 cl., 2 q.h.)  
Basic theory and instruments used in spectrochemical analysis. Course includes such topics as electromagnetic spectrum, ultraviolet and visible spectrophotometry, infrared spectrophotometry, X-ray analysis, fluorescence and phosphorescence, emission spectrophotometry, absorption spectrophotometry, and gas chromatography. *Prereq.* 12.551 or equiv.

**12.553 Radiochemistry** (formerly Instrumental & Radiochemistry III) (2 cl., 2 q.h.)  
Radioactivity and nuclear reactions; production and study of nuclear reactions; equations of radioactive decay; nuclear states and radioactive processes; interaction of radiation with matter; radiation detection and measurement; statistics of radioactivity measurements; techniques for the study of radionuclides; tracers in chemical applications and nuclear energy. *Prereq.* 12.552 or equiv.

**12.554 Physical Chemistry Laboratory I** (3 cl., 2 q.h.) (Laboratory Fee)  
Experimental studies of viscosity, thermochemistry, and homogeneous equilibrium. *Prereq.* 12.542.

**12.555 Physical Chemistry Laboratory II** (3 cl., 2 q.h.) (Laboratory Fee)  
Experimental studies of phase equilibrium, solution thermodynamics, and chemical kinetics. *Prereq.* 12.554.

## EARTH SCIENCE

*Students wishing to elect other earth science courses should refer to the University College Catalog and petition for approval by the Academic Standing Committee of Lincoln College.*

**16.531 Oceanology I** (formerly Oceanography I) (2 q.h.)

Introduction to the origin of the global ocean; the physical and chemical properties of sea water; development of ocean currents and their effect on land masses of the world; problems of ocean pollution. *Prereq.* 16.503 or *equiv.*

**16.532 Oceanology II** (formerly Oceanography II) (2 q.h.)

The habitat zones and organisms of the sea; Phytoplankton, zooplankton, and nekton; economic importance of marine resources for expanding world population. *Prereq.* 16.531 or *equiv.*

**16.533 Oceanology III** (formerly Marine Geology ) (2 q.h.)

Physiography and structure of ocean basins; marine geological processes and features; sedimentation, erosion, shorelines, and bottom topography; methods and techniques of marine geological explorations. *Prereq.* 16.532 or *equiv.*

## BIOLOGY

*Students wishing to elect other biology courses should refer to the University College Catalog and petition for approval by the Academic Standing Committee of Lincoln College.*

**18.507 Gross Anatomy and General Physiology I** (2 cl., 2 q.h.)

Fundamental concepts of living organisms; chemical and biological characteristics of cellular metabolism; the skeletal system and its appendages; general nomenclature, anatomical names and terms. *Prereq.* none.

**18.508 Gross Anatomy and General Physiology II** (2 cl., 2 q.h.)

The systems of the body and the relationships between them; the structure and function of each. *Prereq.* 18.507 or *equiv.*

**18.509 Gross Anatomy and General Physiology III** (2 cl., 2 q.h.)

Continuation of the systems of the body and the relationship between them. *Prereq.* 18.508 or *equiv.*

**18.511 Biology I (General)** (3 cl., lab., 4 q.h.)

(Laboratory Fee)

Universal properties and processes of living organisms; cellular composition and cellular activities; inheritance and cellular control. *Prereq.* none.

**18.512 Biology II (Animal)** (3 cl., 3 lab., 4 q.h.)

(Laboratory Fee)

Functional anatomy of animal organ systems, their interactions and environmental relationships. *Prereq.* 18.511 or *equiv.*

**18.513 Biology III Animal** (3 cl., 3 lab., 4 q.h.)

(Laboratory Fee)

Systematic comparative study of the structure and functions of animals. Diversity of animals considered from the standpoint of evolutionary adaptation. *Prereq.* 18.512 or *equiv.*

**18.521 Microbiology I** (2 cl., 4 lab., 4 q.h.)

(Laboratory Fee)

Morphology and biochemistry of the bacteria. *Prereq.* 18.513 or *equiv.*

**18.522 Microbiology II** (2 cl., 4 lab., 4 q.h.) (Laboratory Fee)

Survey of pathogenic microorganisms. *Prereq.* 18.521 or *equiv.*

**18.523 Microbiology III** (2 cl., 4 lab., 4 q.h.) (Laboratory Fee)

Biology of the protista; the role of microorganisms in the environment and industry.

**18.524 Human Anatomy and Physiology I** (2 cl., 2 lab., 3 q.h.)

Introduction to human anatomy: osteology, anatomy of the muscular system, respiratory system, digestive system, the vascular systems, urogenital system. The laboratory includes a study of human bones and cat dissection. *Prereq.* 18.506 or 18.513 or *equiv.*

**18.525 Human Anatomy and Physiology II** (2 cl., 2 lab., 3 q.h.) (Laboratory Fee)

Principles of physiology and continuation of the study of human anatomy. The laboratory is mainly concerned with muscle physiology. *Prereq.* 18.524 or *equiv.*

**18.526 Human Anatomy and Physiology III** (2 cl., 2 lab., 3 q.h.) (Laboratory Fee)

Continuation of the principles of physiology. The anatomy and physiology of the nervous system, physiology of the endocrine system. The laboratory deals with physiology of respiration and the physiology of blood. *Prereq.* 18.525 or *equiv.*

**18.560 Environmental Ecology** (4 cl., 4 q.h.)

Biotic and abiotic aspects of the environment; geo-physico-chemocycles in the biosphere; food chain and the ecosystem; energy cycling; environmental pollution; population explosion and natural resources; future of man as a species; role of government, industry, and individuals in controlling the environment. *Prereq.* none.

**18.561 Ecology I** (2 cl., 2 q.h.)

Environmental factors; the soil system; water; the atmosphere; temperature, light, wind, pressure; the physico-chemical factors—CO<sub>2</sub>, N, and mineral nutrients; habitat; distribution of plants and animals in the world according to temperature and precipitation. *Prereq.* 18.513 or *equiv.*

**18.562 Ecology II** (2 cl., 2 q.h.)

The ecosystem; ecological niche; the producers, consumers, and decomposers; the pond ecosystem, desert ecosystem, forest ecosystem, and sea shore ecosystem; energy cycle and efficiency of energy utilization; mass, weight, and energy pyramids. *Prereq.* 18.561 or *equiv.*

**18.563 Ecology III** (2 cl., 2 q.h.)

Population ecology; biotic community; population growth; relations between the species; symbiosis; competition; predation; succession. *Prereq.* 18.562 or *equiv.*

**18.564 Man and His Biosphere I** (2 cl., 2 q.h.)

An ecological analysis of the human situation and man's interaction with other organisms; the necessary foundation of biological principles will be presented.

**18.565 Man and His Biosphere II** (2 cl., 2 q.h.)

A continuation of Man and Environment I. *Prereq.* 18.564 or *equiv.*

## LIBERAL ARTS

*Students wishing to elect other humanities, social science, and natural science courses should refer to the University College Catalog and petition for approval by the Academic Standing Committee of Lincoln College.*

### **19.501 Psychology I (2 cl., 2 q.h.)**

An introductory survey of the historical backgrounds of psychology, psychological measurement and testing, and principles of animal and human learning. *Prereq. none.*

### **19.502 Psychology II (2 cl., 2 q.h.)**

Principles of sensory processing, perception, motivation and emotion, and social influences on behavior. *Prereq. 19.501 or equiv.*

### **19.503 Psychology III (2 cl., 2 q.h.)**

Personality theory and measurement, behavior disorders, mental health, and psychotherapy. *Prereq. 19.502 or equiv.*

### **19.507 Psychology (Intensive) (6 cl., 6 q.h.)**

An introductory survey of the historical backgrounds of psychology, psychological measurement and testing, and principles of animal and human learning; principles of sensory processing, perception, motivation and emotion, and social influences on behavior; personality theory and measurement, behavior disorders, mental health, and psychotherapy. *(Not open to students who have taken 19.501, 502, 503.) Prereq. none.*

### **19.508 Fundamentals of Psychology I (4 q.h.)**

Basic concepts from most areas of psychological investigation; the experimental orientation to the study of behavior, including child development, individual differences, learning, and social psychology. (Recommended for psychology majors.) *(Not open to students who have credit for 19.501, 502, 503.)*

### **19.509 Fundamentals of Psychology II (4 q.h.)**

The sensory basis of behavior, cognition, perception, motivation, emotions, normal, and abnormal personality. (Recommended for psychology majors.) *(Not open to students who have credit for 19.501, 502, 503.) Prereq. 19.508 or equiv.*

### **21.501 Sociology I (2 cl., 2 q.h.)**

Basic concepts and theories relating to the study of man as a participant in group life with emphasis on social structure, culture, socialization, and the family.

### **21.502 Sociology II (2 cl., 2 q.h.)**

A continuation of Sociology I, with major emphasis on primary groups, associations, social stratification, collective behavior, and population. *Prereq. 21.501 or equiv.*

### **21.503 Sociology III (2 cl., 2 q.h.)**

A continuation of Sociology II, focusing on the major institutional areas, with



particular attention to problems of social, political, urban, and industrial change. *Prereq.* 21.502 or equiv.

**21.504 Sociology (Intensive)** (6 cl., 6 q.h.)

Basic concepts and theories relating to the study of man as a participant in group life, with emphasis on social structure, culture, socialization, and the family; primary groups, associations, social stratification, collective behavior, and population; the major institutional areas, with particular attention to problems of social, political, urban, and industrial change. (*Not open to students who have taken 21.501, 502, 503.*)

**21.601 Principles of Sociology I** (4 q.h.)

An intensive introduction to basic concepts and theories relating to the study of man as a participant in group life. Emphasis is placed on socialization, culture, social structure, primary groups, family, social stratification, and population.

**21.602 Principles of Sociology II** (4 q.h.)

A continuation of Principles of Sociology I, with emphasis on a critical analysis of American society, with particular attention to problems of social, political, urban, and industrial change. *Prereq.* 21.601 or equiv.

**23.501 Western Civilization I** (2 q.h.)

The beginnings of Western Civilization with emphasis on the political, economic, and social history of ancient and medieval times to 1300.

**23.502 Western Civilization II** (2 q.h.)

Early Modern Europe from 1300 to 1789, with an examination of the two major intellectual movements, the Renaissance and the Enlightenment, and their impact on the rise of national states, capitalism, and Protestantism.

**23.503 Western Civilization III** (2 q.h.)

Modern Europe from 1789 to the present, emphasizing the rise of ideology in a technological age.

**23.507 Western Civilization (Intensive)** (6 cl., 6 q.h.)

The beginnings of Western civilization, with emphasis on the political, economic, and social history of the ancient and medieval world; modern Europe to 1815, with an examination of the two major intellectual movements—the Renaissance and the Enlightenment—and their impact upon religious movements, economic developments, and the rise of national states; Western civilization since 1815, emphasizing the Scientific and Industrial Revolutions and their impact upon democracy and authoritarianism, nationalism, and internationalism, and war and peace. (*Not open to students who have taken 23.501, 502, 503.*) *Prereq.* none.

**23.509 Western Civilization A** (3 q.h.)

Western Civilization to 1648.

**23.510 Western Civilization B** (3 q.h.)

Western Civilization since 1648.

**27.541 Drawing I (3 q.h.)**

Practice in the techniques and development of drawing in pencil and pen and ink, with concentration on basic drawing problems.

**27.542 Drawing II (3 q.h.)**

Practice in the techniques of wash drawing, scratch board drawing, and mixed medias. *Prereq.* 27.541 or *equiv.*

**27.543 Drawing III (3 q.h.)**

Study of human anatomy and the practice of figure drawing and composition. *Prereq.* 27.542 or *equiv.*

**30.501 English for International Students I (2 cl., non-credit)**

Introduction to English grammar for foreign-speaking students with an emphasis on listening, speaking, and writing; selected readings and exercises to strengthen vocabulary and pronunciation. *Prereq.* none.

**30.502 English for International Students II (2 cl., non-credit)**

A continuation for 30.501, emphasizing the preparation of written and oral reports and business and social correspondence. *Prereq.* 30.501.

**30.503 English for International Students III (2 cl., non-credit)**

Advanced work in written and spoken English preparatory to entering 30.504 English I. *Prereq.* 30.502.

**30.600 Elements of Composition (2 q.h.)**

An intensive study of grammatical forms and structural patterns of current English.

**30.601 Composition and Rhetoric I (2 q.h.)**

A detailed examination of the modes of rhetoric, especially exposition and argument, and the exercises in the development of paragraphs and short papers. (*Not open for students who have credit for 30.504.*)

**30.602 Composition and Rhetoric II (2 q.h.)**

A continuation of 30.601. Stress is on the short paper, the longer library paper, and formal documentation. *Prereq.* 30.601. (*Not open to students who have credit for 30.505.*)

**30.603 Composition and Rhetoric (Intensive) (4 q.h.)**

Same as 30.601 *plus* 30.602.

**30.604 Introduction to Literary Forms I (2 q.h.)**

The development of techniques for reading imaginative writing. Short and long fiction are the materials for study, discussion, and two critical papers. *Prereq.* 30.602.

**30.605 Introduction to Literary Forms II (2 q.h.)**

A continuation of 30.604, but here the materials are poetry and drama. *Prereq.* 30.604.

**30.606 Introduction to Literary Forms (Intensive) (4 q.h.)**

Same as 30.604 *plus* 30.605.

**30.113 Freshman Writing (4 cl., 4 q.h.)** (Day Curriculum)

Important principles of logic and rhetoric applied to exposition and argumentation writing; review of sentence structure, punctuation, and paragraphing; extensive reading and analysis of the essay form; theme assignments.

**30.114 Introduction to Literature (4 cl., 4 q.h.)** (Day Curriculum)

An introduction to literary forms: poetry, prose fiction, and drama; intensive reading in various forms and discussion of different approaches to literature.

*Prereq.* 30.113.

**30.115 Great Themes in Literature (4 cl., 4 q.h.)** (Day Curriculum)

Content determined by instructor, who chooses a theme and a number of books from different periods to illustrate it. Examples: The Hero in Literature, Visions of Utopia, Science Fiction, etc. *Prereq.* 30.114.

## BUSINESS MANAGEMENT

*Students wishing to elect other business courses should refer to the University College Catalogue and petition for approval by the Committee on Education of Lincoln College.*

**39.115 Principles and Problems of Economics (4 cl., 4 q.h.)** (Day Curriculum)

An introduction to the conceptual aspects of economics; the flow of national income; economic growth and fluctuation; the role of money and banking; monetary and fiscal policies. Emphasis on developing conceptual tools for use in the analysis of economic problems facing modern society.

**39.501 Economic Principles and Problems I (2 cl., 2 q.h.)**

Macro analysis-national income concepts and determination; macro economic goals and problems; monetary and fiscal policy. *Prereq.* none.

**39.502 Economic Principles and Problems II (2 cl., 2 q.h.)**

Micro analysis-theory of the firm and market structure; supply, demand, market price; international economics. *Prereq.* 39.501.

**39.503 Economic Principles and Problems III (2 cl., 2 q.h.)**

Applications of economic principles to selected problem areas; poverty, competition, labor, agriculture, urban. *Prereq.* 39.502.

**39.510 Statistics for Quality Control (2 cl., 2 q.h.)**

Fundamentals of statistical concepts and computations necessary to the understanding of statistical quality control; frequency distributions, measures of centering and dispersion; computation of average and standard deviation for ungrouped and grouped data; determination of areas under the normal distribution curve; standard deviation of the mean; combinations and permutations and their use of computer probabilities computations associated with the hypergeometric, binomial, and Poisson distributions. *Prereq.* 10.503 or equiv.

**39.511 Statistics I** (2 cl., 2 q.h.)

Introduction to the collection and organization of data; concentration on the nature, computation, and uses of measures of central tendency and variability. *Prereq.* 39.503.

**39.512 Statistics II** (2 cl., 2 q.h.)

Introduction to statistical inference, parameters of samples, tests of significance, "t" distribution, and chi square. *Prereq.* 39.511.

**39.513 Statistics III** (2 cl., 2 q.h.)

Introduction to the analysis of variance, trend fitting, linear regression, seasonal adjustment, and index numbers. *Prereq.* 39.512.

**39.514 Statistics (Intensive)** (6 cl., 6 q.h.)

Introduction to the collection and organization of data; concentration on the nature, computation, and uses of measures of central tendency and variability; introduction to statistical inference, parameters of samples, tests of significance, "t" distribution and chi square; introduction to the analysis of variance, trend fitting, linear regression, seasonal adjustment and index number. (*Not open to students who have taken 39.511, 512, 513.*) *Prereq.* 39.503.

**41.501 Accounting Principles I** (2 cl., 2 q.h.)

The basic concepts and methodology of accounting for service and merchandising businesses. (Offered every quarter on all campuses) *Prereq.* none.

**41.502 Accounting Principles II** (2 cl., 2 q.h.)

The problems of income measurement and valuation related to sources and uses of invested capital. (Offered every quarter) *Prereq.* 41.501.

**41.503 Accounting Principles III** (2 cl., 2 q.h.)

The use of debt and investments in managerial financial decisions, followed by a brief introduction into cost decision analysis. (Offered every quarter) *Prereq.* 41.502.

**41.541 Accounting Principles (Intensive)** (6 q.h.)

Basic concepts and methodology of accounting for service and merchandising businesses; the problems of income measurement and valuation related to sources and uses of invested capital; the use of debt and investments in managerial financial decisions, followed by a brief introduction into cost decision analysis. (*Not open to students who have taken 41.501, 502, 503.*) (Available at Boston, Burlington, and Weymouth campuses.)

**45.501, 502, 503 Management and Organization I, II, III** (6 q.h.)

An introduction to the American business system; comparison with other economic systems; principles and concepts of organization and management. Emphasis on topics such as the social responsibilities of business; business and its environment; business ethics, etc. Traditional material presented toward an understanding of modern American business and preparation for a business career. The environment within which business operates; a review of the theory and practice of organization; the "what" and "how" of the management process; an application of the concepts covered to the functional areas of business. (Offered every quarter on all campuses) *Prereq.* 45.502, 503.

**45.541 Law I** (2 cl., 2 q.h.)

CONTRACTS: Nature, kinds, and formation of contracts; essential elements; interpretation of contracts. (Available on most campuses) *Prereq. none.*

**45.542 Law II** (2 cl., 2 q.h.)

AGENCY: Nature, formation, and termination of agency relationships; rights and duties of principal and agent, scope of agent's authority. *Prereq. 45.541.*

SALES: Nature of sales contracts; warranties; transfer of title; rights and remedies of seller and buyer. (Available on most campuses) *Prereq. 45.541.*

**45.543 Law III** (2 cl., 2 q.h.)

NEGOTIABLE INSTRUMENTS: Bills, notes, and checks; liabilities and defenses of parties; procedure upon dishonor; discharge. *Prereq. 45.542.*

BUSINESS ORGANIZATIONS: Survey of corporations and partnerships. (Available on most campuses) *Prereq. 45.542.*

**45.643 Law (Intensive)** (6 q.h.)

CONTRACTS: Nature, kinds, and formation of contracts; essential elements; interpretation of contracts. AGENCY: Nature, formation and termination of agency relationships; rights and duties of principal and agent; scope of agent's authority. SALES: Nature of sales contracts; warranties; transfer of title; rights and remedies of seller and buyer. NEGOTIABLE INSTRUMENTS: Bills, notes, and checks; liabilities and defenses of parties; procedure upon dishonor; discharge. BUSINESS ORGANIZATIONS: Survey of corporations and partnerships. *Not open to students who have taken 45.541, 542, 543.* (Offered every quarter on Boston, Burlington, and Weymouth campuses)

**45.561 Statistical Quality Control** (2 cl., 2 q.h.)

Description and practical application of the basic statistical quality control methods for quality assurance, quality control, and quality improvement of products and services; the determination of process capability; the use of quality-control charts for measurable and nonmeasurable quality characteristics. (Offered Fall Quarter on most campuses) *Prereq. 39.513.*

**45.562 Statistical Quality Control II** (2 cl., 2 q.h.)

Continuation of Statistical Quality Control I, covering the application of statistical and probability considerations in acceptance sampling of purchased material, work-in-process, and outgoing products. Methods of predicting sampling results using the hypergeometric, the binomial, and the Poisson distributions; development of the operating characteristic curve for any sampling plan; risks involved in sampling and the concepts of AQL, RQL, AOQL. (Offered Winter Quarter on most campuses) *Prereq. 45.561.*

**45.563 Management of Quality Control** (2 cl., 2 q.h.)

Modern concepts of managing the quality function of a company to maximize customer satisfaction at minimum quality cost; the idea of total quality control; measurement of the costs of quality; development of a coordinated program of improvement; organizing for diagnosing the direct causes. (Offered Spring Quarter on most campuses)

**45.608 Quality Control and Management (Intensive)** (6 q.h.)

Same as 45.561, 562, and 563. (*Not open to students who have taken these courses.*) (Offered Fall Quarter on Boston campus only) *Prereq.* 39.513.

**45.570 Electronic Data Processing I** (2 cl., 2 q.h.)

An introduction to computers, including the discussion of numbering and coding systems; examples of typical business problems; and study of basic programming concepts. (Offered every quarter on all campuses) *Prereq.* none.

**45.571 Electronic Data Processing II** (2 cl., 2 q.h.)

A survey of available computer systems; price and performance comparison of available input, output, and storage media; discussion of filing and sorting techniques; and presentation of data communications concepts and terminals. (Offered every quarter on all campuses) *Prereq.* 45.570.

**45.572 Electronic Data Processing III** (2 cl., 2 q.h.)

A presentation of COBOL, FORTRAN, and other programming languages; discussion of business data processing and operations research applications; and a summary of trends in EDP. (Offered every quarter on all campuses) *Prereq.* 45.571.

**45.648 Electronic Data Processing (Intensive)** (6 q.h.)

An introduction to computers, including the discussion of numbering and coding systems; examples of typical business problems; a study of basic programming concepts; a survey of available computer systems; price and performance comparison of available input, output, and storage media; discussion of filing and sorting techniques; and presentation of data communications concepts and terminals; a presentation of COBOL, FORTRAN, and other programming languages; discussion of business data processing and operations research applications; and a summary of trends in EDP. (*Not open to students who have taken 45.570, 571, 572.*) (Offered every quarter on Boston, Burlington, and Weymouth campuses)

**48.501 Transportation Management I** (2 cl., 2 q.h.)

Basic principles of management and organization; evaluation of all transportation modes; primary concepts of freight classification and rates. *Prereq.* none.

**48.502 Transportation Management II** (2 cl., 2 q.h.)

Study of primary management functions—use of tariffs, routing, document processing, analysis of special carrier services and liabilities, and control of private carrier operations. *Prereq.* 48.501.

**48.503 Transportation Management III** (2 cl., 2 q.h.)

Appraisal of federal transport policy and introduction to factors of physical distribution—inventory control, warehousing, material handling, packaging, and international distribution. *Prereq.* 48.502.

**48.504 Transportation Regulation and Promotion I** (2 cl., 2 q.h.)

Study of the history and content of the Interstate Commerce Act. (Available on Boston campus only) *Prereq.* 48.503.

**48.505 Transportation Regulation and Promotion II (2 cl., 2 q.h.)**

Examination of Administrative Law and Procedure, the Code of Ethics, and the General Rules of Practice. *Prereq.* 48.504.

**48.506 Transportation Regulation and Promotion III (2 cl., 2 q.h.)**

Analysis of cases pertinent to the Commerce Clause and comprehensive preparation for the Interstate Commerce Commission Practitioners Examination. *Prereq.* 48.505.

**48.514 Elements of Transportation and Distribution (2 q.h.)**

An introduction to regulatory, economic, and management aspects of transportation from the viewpoints of shippers, government, and carrier managers. Topics include: costs, rates, operations, entry, mergers, intercity passenger and urban transportation. A course of general interest to students of business, law, or government. (Available on Boston, Burlington, Weymouth, and Norwood campuses) *Prereq.* none.

**48.591 Transportation Management A (3 cl., 3 q.h.)**

Evaluation of all transportation modes, singly and in combination with one another; analysis of the bill of lading and other transportation documents; study of primary concepts in transportation pricing; freight classification, classification rule, and freight dates; study of primary freight-management functions; use of tariffs and rate procedure with carrier bureaus and the Interstate Commerce Commission; routing and consolidation of freight. *Prereq.* none.

**48.592 Transportation Management B (3 cl., 3 q.h.)**

Special services performed by carriers—diversion and reconsignment, transit, protective services, storage, tracing, switching, pickup and delivery, weighing, loading and unloading; freight—claim procedure and prevention; management of a private transportation system; exporting and importing; inventory management; materials handling and packaging; warehousing; and factors of industrial location. *Prereq.* 48.591.

**48.593 Air Transportation Management A (3 cl., 3 q.h.)**

The economics and regulation of scheduled passenger service and scheduled-cargo service; corporate and general aviation policy making and procedures. *Prereq.* none.

**48.594 Air Transportation Management B (3 cl., 3 q.h.)**

Areas of specific study include route structures, equipment, scheduling, operations, pricing, cost analysis, and financing. *Prereq.* 48.593.

## FIRE TECHNOLOGY

**91.301 Fire Protection Science I (2 cl., 2 q.h.)**

An overall review of the fire protection field, with the objective of providing career orientation. *Prereq.* none.

**91.302 Fire Protection Science II (2 cl., 2 q.h.)**

An overall review of the public fire service; the basic organization, manpower, and utilization of equipment by municipal fire departments. *Prereq.* 91.301.

**91.303 Chemistry of Fires and Explosions (2 cl., 2 q.h.)**

A study of the chemistry and physics of fire and some of the common hazards; electrical fires and fires caused by spontaneous heating and ignition as well as flammable liquids, gases, and hazardous chemicals; field and laboratory investigation of fires; explosions, explosives, and field and laboratory investigations of explosions. *Prereq.* 91.302.

**91.304 Fire Prevention I (2 cl., 2 q.h.)**

Eliminating human and economic fire losses; application of empirical and research knowledge in fire prevention measures. *Prereq.* none.

**91.305 Fire Prevention II (2 cl., 2 q.h.)**

An overview of collaborative efforts, and developing requirements and opportunities, in the interest of fire prevention and its corollary loss control. *Prereq.* 91.304.

**91.306 Fire Apparatus Function and Design (2 cl., 2 q.h.)**

An analysis of the procurement policies that should be followed in acquiring fire fighting apparatus and equipment with details on the type and amount for good fire fighting efficiency, including a discussion of fire department buildings; review of the physical properties of water that are pertinent to hydraulic calculations; discussion of hose, streams, and nozzles. *Prereq.* none.

**91.307 Fire Protection Systems I (2 cl., 2 q.h.)**

A study of the theories and mechanics involved in the operation of fire protection systems and equipment; fire detection and extinguishing systems of both automatic and manual types, including sprinkler, standpipe systems, and water spray protection. *Prereq.* none.

**91.308 Fire Protection Systems II (2 cl., 2 q.h.)**

A study of fire detection and suppression systems of the manual and automatic type; types of alarm systems, detectors, and actuators; systems using dry chemicals, carbon dioxide, foam, and Halon 1301; explosion prevention; suppression systems for buildings. *Prereq.* 91.307.

**91.309 Fire Service Operations I (2 cl., 2 q.h.)**

Fire service operations, its goal and objectives; management of fire service operations and various aspects of planning, organizing, delegation, staffing, implementing, directing, and controlling; systems approach to fire service management with management exercises. *Prereq.* none.

**91.310 Fire Service Operation II (2 cl., 2 q.h.)**

Fire service operation with respect to government and collective bargaining, leadership and discipline, performance analysis, communications and the importance of listening, effective speaking and report writing, records and budgets; fire service operation public relations in the community and the press. *Prereq.* 91.309.

**91.311 Fire Service Operations III (2 cl., 2 q.h.)**

Fire defense planning and development; determining fire defense requirements; organizing the defense and training programs; the fire officer as an instructor, evolution of system, strategy, tactics, and other types of emergencies. *Prereq.* 91.310.



**91.312 Environmental Physiology** (2 cl., 2 q.h.)

Fundamental principles in human physiology and the relationship of man to his physical and chemical environment. *Prereq.* 12.509.

## SUPPLEMENTAL COURSES

**93.300 Celestial Navigation I** (2 cl., 2 q.h.)

Principles of celestial navigation, including celestial pole identification, use of sextant and corrections, latitude from morning, noon, and afternoon sightings, and enough descriptive astronomy for the required background. *Prereq.* *Math. Placement Test*, 10.302 or *equiv.*

**93.301 Celestial Navigation II** (2 cl., 2 q.h.)

Principles of celestial navigation continued, including solar time, reduction tables and forms, use of Nautical Almanac, applications of true azimuth of sun, and enough descriptive astronomy for the required background. *Prereq.* 93.300.

**93.302 Celestial Navigation III** (4 cl., 4 q.h.)

Principles of celestial navigation, including celestial pole identification, use of sextant and corrections, latitude from morning, noon, and afternoon sightings, solar time, reduction tables and forms, use of Nautical Almanac, applications of true azimuth of sun, and enough descriptive astronomy for the required background. *Prereq.* *Math. Placement Test*, 10.302 or *equiv.*

**93.305 Survival Training** (2 cl., 2 q.h.)

Training in and demonstration of modern techniques of human survival; methods in the wilderness environment. *Prereq.* *none.*

**93.401 Technical Communications** (4 cl., 4 q.h.)

Thought organization and effective sentences; written reports and instruction manuals; specifications and proposals; graphic aids and reproduction processes. *Prereq.* 30.602.

**93.402 Technical Communications I** (2 cl., 2 q.h.)

Thought organization and effective sentences; written reports and instruction manuals. *Prereq.* 30.602.

**93.403 Technical Communications II** (2 cl., 2 q.h.)

Specifications and proposals; graphic aids and reproduction processes. *Prereq.* 93.402.

## AVIATION TECHNOLOGY

**96.307 Introduction to Aircraft Design** (1 cl., 2 lab., 2 q.h.)

Basic orthographic principles and interpretations of aircraft design; a presentation of basic aerodynamics, structural characteristics of aircraft, materials, and manufacturing processes. Laboratory work will involve aircraft construction. *Prereq.* 10.391 and 11.391.

**96.308 Aircraft Power & Systems** (4 cl., 4 q.h.)

Engine types, nomenclature, and engine development; engine cycles and principles, performance, power and its measurement, ratings; design and construction of parts and their functions; valve mechanisms and timing; cooling system, carburation, fuel system, ignition system, lubrication, and oil system design; hydraulic, pneumatic, electrical and mechanical systems; landing gear types, design, loads and limitations; landing gear retraction systems; general flight control systems including rudder, elevator, aileron, and flaps; loads and limitations de-icer systems for flight surfaces, propeller, and engine breathing systems; cabin pressure and oxygen systems; airspeed and general air-driven instrument systems. *Prereq. none.*

**96.309 Introduction to Aerodynamics** (1 cl., 1 q.h.)

A non-calculus presentation of basic fluid dynamics and principles of fluid flow. Includes continuity, Bernoulli, and momentum equations; streamlines, stream tubes, drag, theory of lift, wing theory, vortex flow, ground effect, stalls, boundary layer, flow separation, control surfaces, stability, and balance. *Prereq. 10.308 and 11.318 or concurrently.*

**96.310 Basic Helicopter Aerodynamics** (2 cl., 2 q.h.)

General aerodynamics; helicopter components and their functions; loads and load factors; gyroscopic procession principle; performance; introduction to flight manual, helicopter operations in confined areas, precautionary measures and critical conditions. *Prereq. 96.392.*

**96.311 Aviation Meteorology I** (2 cl., 2 q.h.)

A survey of the principles of meteorology and structure of the atmosphere; meteorological instruments and observations. *Prereq. 11.306 or equiv.*

**96.312 Aviation Meteorology II** (2 cl., 2 q.h.)

Weather map interpretation and common aviation weather teletype codes; physical approach to pressure, temperature, basic thermodynamics, stability, and cloud formations. *Prereq. 96.311.*

**96.313 Climatology** (2 cl., 2 q.h.)

Climate causes and effects; climatology of several regions of the world; application of climatology to problems of airport location and construction, airline operation, and private flying. *Prereq. 96.312.*

**36.321 Avionics I** (2 cl., 2 q.h.)

Review of basic electronic principles, hazards, aircraft electrical systems, FCC regulations, selection, installation, and service of avionics, strobe lights, radio communications. *Prereq. 03.309 or 03.395.*

**96.322 Avionics II** (2 cl., 2 q.h.)

Antennas, ADF, omni, localizer, marker beacon, audio systems, transponders. *Prereq. 96.321.*

**96.323 Avionics III** (2 cl., 2 q.h.)

Glide slope, DME, RNAV, radar, INAV, autopilots. *Prereq. 96.322.*

**96.324 Introductory Avionics** (4 cl., 4 q.h.)

Basic coverage of electronics including: vacuum tube principles, semiconductor physics principles, power supplies, amplifiers, oscillators, and pulse circuits; generator and motor principles and applications; basic concepts of avionics, electrical hazards, aircraft electrical systems, electrical instruments, strobe lights, FCC regulations, radio communications, and antennas. *Prereq.* 11.319.

**96.325 Avionics** (4 cl., 4 q.h.)

Selection, installation, and servicing of avionics, automatic direction finders, marker beacons, omnirange and localizers, audio switching systems, ATC transponders, glide slope systems, distance measuring equipment, autopilots, and radar. *Prereq.* 96.324.

**96.326 Avionics Laboratory I** (3 lab., 2 q.h.)

Experiments dealing with laboratory techniques in measuring instruments, signal generators, and oscilloscopes; junction and field effect transistor characteristics; filter circuits; Q meter, coils with iron cores; vacuum and semi-conductor diode; power supplies including the regulated type, silicon controlled rectifier, transistor amplifiers. *Prereq.* 96.324 and 96.325.

**96.327 Avionics Laboratory II** (3 lab., 2 q.h.)

Experiments in oscilloscopes, double-tuned transformers, audio frequency oscillators, modulation of class C amplifiers, the diode detector, RF and crystal oscillators; testing of a radio receiver; reactance modulators, F.M. detectors. *Prereq.* 96.326.

**96.328 Avionics Laboratory III** (3 lab., 2 q.h.)

Experiments in navigation equipment for aircraft. *Prereq.* 96.327.

**96.329 Radio Communications I** (2 cl., 2 q.h.)

Preparation for second-class Radiotelephone License Examination, Elements I, II, and III; theory and Q and A review of direct current circuits and components, alternating current circuits and components, vacuum tubes and transistors, vacuum tube and transistor circuits, audio frequency equipment, radio frequency amplifiers, power supplies, oscillators, and modulation. *Prereq.* 96.324.

**96.330 Radio Communication II** (2 cl., 2 q.h.)

Continuation of Radio Communications I. Theory and Q and A review of detectors, transmitters, receivers, batteries, motors and generators, measuring and measuring instruments, propagation of radio waves, antennas, rules and regulations. *Prereq.* 96.329.

**\*96.331 Primary Flight I** (2 lab., 1½ q.h.)

Elements of flight principles (pre-flight operations), operation of aircraft systems; taxi operations and ground performance; basic flight maneuvers; take-offs and landings. *Prereq.* Class I or II, medical certificate.

\*See Flight Tuition Schedule, pages 56 and 57.

**\*96.332 Primary Flight II** (2 lab., 1½ q.h.)

Review of basic flight maneuvers; advanced maneuvers and stall procedures; short field take-offs and landings; power approaches and landing under varying conditions; emergency operation of aircraft equipment. *Prereq.* 96.331. *Student must have a current endorsement for solo flight.*

**\*96.333 Primary Flight III** (2 lab., 1½ q.h.)

Cross country flight planning and flight; lost procedures and related emergencies; use of radio and navigation equipment under V.F.R. (visual flight rules); control of aircraft by reference to flight instruments only; private license qualifications complete. *Prereq.* 96.332. *Student must have a current endorsement for solo cross country flight.*

**\*96.341 Commercial Flight I** (2 lab., 1½ q.h.)

Review of all primary flight maneuvers; advanced maneuvers; precision take-offs and landings; cross wind techniques. *Prereq.* 96.333.

**\*96.342 Commercial Flight II** (2 lab., 1½ q.h.)

Precision flight maneuvers—spirals about a point; shallow and steep onpylon eights; 720° steep power turns; solo practice. *Prereq.* 96.341.

**\*96.343 Commercial Flight III** (2 lab., 1½ q.h.)

Continuation of precision maneuvers—lazy eights, chandelles, maneuvers at minimal controllable airspeed; continued related simulator practice; night flying; basic instrument flying. *Prereq.* 96.342.

**\*96.344 Commercial Flight IV** (2 lab., 1½ q.h.)

Stalls from all normally anticipated flight altitudes with and without power; simulated emergency procedures and forced landings; basic instrument flying. *Prereq.* 96.343.

**\*96.345 Commercial Flight V** (2 lab., 1½ q.h.)

Advanced cross country flight planning and navigation; advanced radio communications and traffic procedures; review of all maneuvers and procedures. Certification by F.A.A. *Prereq.* 96.344.

**\*96.351 Instructional Flight I** (2 lab., 1½ q.h.)

Fundamentals of flight instruction; development of student-instructor relationship and rapport; teaching procedures in flight training; instructor responsibilities and record maintenance; instructor flight demonstrations; qualification and certification by F.A.A. *Prereq.* 96.345 and 96.354 or concurrently.

**\*96.352 Instructional Flight II** (2 lab., 1½ q.h.)

Continuation of fundamentals of instruction; flight training procedures; student-instructor relationship; review of all maneuvers and flight demonstrations. Certification by F.A.A. *Prereq.* 96.351.

**96.354 Principles of Flight Instruction** (2 cl., 2 q.h.)

Fundamentals and principles of instructing; learning concepts of teacher-student

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\*See Flight Tuition Schedule, pages 56 and 57.

communications; use of special flight teaching aids and training procedures.

*Prereq.* 96.345 or equivalent test

**\*96.355 Instrument Instructor Flight A** (2 lab., 2 q.h.)

Fundamentals and procedures for teaching operating limitations of all instruments, control of rate of climb and descent to pre-determine altitudes, procedures for coping with unusual altitudes and critical situations.

**\*96.356 Instrument Instructor Flight B** (2 lab., 2 q.h.)

Principles and procedures of teaching methods in instrument flight planning and enroute weather analysis, radio communication, and enroute navigation and orientation. Oral exam and flight test preparation.

**96.357 Multi-Engine Flight** (2 lab., 1½ q.h.)

Preparation for an F.A.A. multi-engine rating test which includes an oral exam on the aircraft documents performance and operating characteristics; multi-engine flight instruction on basic piloting techniques and emergency procedures.

**96.358 Helicopter A** (2 lab., 2 q.h.)

Elements of flight principles, operations of helicopter systems; hovering flight; take-off, hover, forward climb, pattern, power-glide approach, transition to hovering, vertical landing; square patterns; crosswind take-off and landing; running take-off and landing autorotations. *Prereq.* Commercial Fixed Wing License; Class I or II medical certificate.

**96.359 Helicopter B** (2 lab., 2 q.h.)

Review and practice take-offs, landings, all maneuvers, plus settling with power and recovery, quick stops, precision pattern and landing; solo practice; dual review for F.A.A. Flight Test. *Prereq.* 96.358.

**96.360 Aircraft Analysis I** (2 cl., 2 q.h.)

A presentation of subsonic aerodynamics and structural characteristics of aircraft. *Prereq.* 11.317.

**\*96.361 Instrument Flight I** (2 lab., 1½ q.h.)

Instrument flight planning, preparing, and filing; aircraft performance (range and fuel requirements); required instruments and their proper use; basic instrument flying, needle ball, and airspeed only; instrument use in turns, climbs, descents, stalls, and approach speeds; recovery from unusual altitudes; airwork using all altitudes instruments. *Prereq.* 96.345.

**\*96.362 Instrument Flight II** (2 lab., 1½ q.h.)

Radio navigation while flying on instruments; use of L.F. (low frequency), omni-range, or A.D.F. (automatic direction finder); advanced radio communications; instrument approaches, holding procedures, missed approach procedures, emergencies (radio and instrument malfunctions); air traffic control instructions and procedure. Rating by F.A.A. *Prereq.* 96.361.

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\*See Flight Tuition Schedule, pages 56 and 57.

**96.363 General Aviation Operations I** (2 cl., 2 q.h.)

A presentation of the major functions of airport management—organization, zoning, adequacy, financing, revenues and expenses, evaluation, and safety; the airport and its socioeconomic effect on the community. *Prereq. none.*

**96.364 General Aviation Operations II** (2 cl., 2 q.h.)

Study and analysis of airport functions, such as fixed base operators, pilot training schools; airtaxi operations in both charter and schedule activities. *Prereq. 96.363.*

**96.365 General Aviation Operations III** (2 cl., 2 q.h.)

A continuation through case studies of general aviation operations. *Prereq. 96.364.*

**96.366 General Aviation Operations (Intensive)** (6 q.h.)

A presentation of the major functions of airport management—organization, zoning, adequacy, financing, revenues and expenses, evaluation, and safety; the airport and its socioeconomic effect on the community; study and analysis of airport functions, such as fixed base operators, pilot training schools; airtaxi operations in both charter and schedule activities.

**96.370 Air Cargo Practices A** (3 cl., 3 q.h.)

Study of airline and air freight forward cargo practices with emphasis on regulation, economics, marketing, and handling and organizational aspects.

**96.371 Air Cargo Practices B** (3 cl., 3 q.h.)

A continuation through case studies of air cargo operations.

**96.372 Airline Traffic and Sales A** (3 cl., 3 q.h.)

Functions of the traffic and sales department; relationship between the travel agencies and the airlines; relationships with other carriers; reservations and the procedures involved in the transportation of one passenger of NCA and another carrier; airlines promotion; the reservation agent and training.

**96.373 Airline Traffic and Sales B** (3 cl., 3 q.h.)

Tariffs and schedules with an explanation of how flight times are established; flight frequencies; new routes; and the establishment of ticket fares; aspects of cargo and charters.

**96.376 General Aviation Operations A** (3 cl., 3 q.h.)

A presentation of the major functions of airport management; organization, zoning, adequacy, financing, revenues and expenses, evaluation, and safety; the airport and its socioeconomic effect on the community. *Prereq. none.*

**96.377 General Aviation Operations B** (3 cl., 3 q.h.)

Study and analysis of airport functions, such as, fixed base operators, pilot training schools; airtaxi operations in both charter and schedule activities. *Prereq. 96.376.*

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\*See Flight Tuition Schedule, pages 56 and 57.

**96.378 Air Traffic Control Systems A** (3 cl., 3 q.h.)

Survey of the total aerospace system and management; air traffic administrative coordination; regional responsibilities; NAFEC organization of center, tower, and station.

**96.383 Advanced Aircraft Analysis** (2 cl., 2 q.h.)

A presentation of supersonic aerodynamics and structural characteristics of aircraft. *Prereq.* 11.318.

**96.384 Aviation History** (3 cl., 3 q.h.)

Historical survey of efforts in manned flight, aircraft development, pioneers in flight, general aviation, military and commercial aspects of flight, and effects on modern civilization. *Prereq.* none.

**\*96.390 Pilot Refresher** (2 lab., 1½ q.h.)

This course consists of 24 hours of concentrated instruction and evaluation of pilot proficiency in advanced instrument flying and instructional flight procedures. It involves simulator flight, aircraft flight, ground instruction, and the updating of current procedures in flight instruction and flight planning procedures. *Prereq.* special permission of flight director.

**96.391 Air Science & Navigation A** (3 cl., 3 q.h.)

Aircraft structures and components; aerodynamic forces; airfoil terminology—lift and drag coefficient; boundary layer problems and control; Reynolds Number and Scale Effect; earth in space; latitude; longitude; properties and components of the atmosphere; map projections; dead reckoning; reciprocating engine theory; gas turbine engine theory; planform effects; aircraft weight and balance.

**96.392 Air Science & Navigation B** (3 cl., 3 q.h.)

Radio navigation; VOR, ADF, DME, and TACAN; federal air regulations; airplane performance (climb, range, altitude, takeoff, and landing); aircraft propeller theory and operation; specific aircraft substructures (landing gear et. al.); advanced DR navigation problems (radius of action, unknown wind); general review. *Prereq.* 96.391.

**96.393 Advanced Air Science & Navigation A** (3 cl., 3 q.h.)

Supersonic aerodynamics physiologic factors of flight; instrument flight charts; IFR planning; instrument flight rules; static and dynamic axial stability of aircraft; control movements and forces; stability problems. *Prereq.* 96.392.

**96.394 Advanced Air Science and Navigation B** (3 cl., 3 q.h.)

Spins and spin recoveries; flying high performance aircraft; area charts; arrival and departure; SID charts; clearance notation; aircraft performance; applications of aerodynamics to specific problems of flight; helicopter stability; structural strength limitations; doppler radar; precision approach radar and airport surveillance radar; loran; consolan; pressure pattern flight. *Prereq.* 96.393.

**96.395 Meteorology & Climatology A** (3 cl., 3 q.h.)

A survey of the principles of meteorology and structure of the atmosphere;

\*See Flight Tuition Schedule, pages 56 and 57.

meteorological instruments and observations; weather map interpretation and common aviation weather teletype codes. *Prereq.* 11.392.

**96.396 Meteorology & Climatology B** (3 cl., 3 q.h.)

Physical approach to pressure, temperature, basic thermodynamics, stability, and cloud formations; climate causes and effects; climatology of several regions of the world; application of climatology to problems of airport location and construction, airline operation, and private flying. *Prereq.* 96.395.

**96.399 Flight Physiology** (2 cl., 2 q.h.)

The study of the physical and chemical processes of the body; functions of the living body and its environment; adaptive changes of function of the body resulting from a change in environment with emphasis on flight; the effects of medication on the function and reactions of the body with emphasis on flight; the effects of the state of the mind on the function and reactions of the body with emphasis on flight.

**96.401 Aircraft Engines I** (2 cl., 2 q.h.)

Engine types, nomenclature, and engine development; engine cycles and principles, performance, power and its measurement, ratings; design and construction of parts and their functions; valve mechanisms and timing; cooling system, carburetion, fuel system, ignition system, lubrication, and oil system design.

**96.402 Aircraft Engines II** (2 cl., 2 q.h.)

A presentation of turbo-engine types and their development; radial flow and axial flow types, turbo-prop, compounding, ram jets, pulse jets and rockets; principles of combustion and propulsion, performance, power, thrust, and their measurement, design, and construction; fuel, lubrication, and ignition systems.

**96.425 Chronology of Aviation I** (2 cl., 2 q.h.)

1903-1939; early flights 1903-1914 era; World War I 1914-1918 era; airmail and barnstorming era; famous pilots and company histories traced 1920-1939 era, including history of air racing. *Prereq.* none.

**96.426 Chronology of Aviation II** (2 cl., 2 q.h.)

1939-present; World War II 1939-1945 era; all personalities and company histories traced; post World War II up to Apollo 17, final flight in Apollo program. *Prereq.* none.

**96.430 Aviation Preventive Maintenance** (2 cl., 2 q.h.)

For pilots and aircraft owners. Airframe and powerplant nomenclature, structures, and systems; maintenance that a pilot can and is allowed to do to the airframe and engine of his aircraft; proper techniques. *Prereq.* none.

**96.431 Aircraft Systems** (2 cl., 2 q.h.)

Hydraulic, pneumatic, electrical, and mechanical systems; landing gear types, design, loads, and limitations; landing gear retraction systems; general flight control systems including rudder, elevator, aileron, and flaps; loads and limitations; de-icer systems for flight surfaces, propeller, and engine breathing systems; cabin pressure and oxygen systems; airspeed and general air-driven instrument systems. *Prereq.* none.



**96.432 Aircraft Laboratory** (2 lab., 1 q.h.)

Aircraft construction methods and techniques will be applied to the construction of aircraft components. *Prereq. none.*

## NEW GENERAL INTEREST COURSES

*In response to repeated requests, we are offering several new courses in technology which do not require students to have a mathematical background. These courses have a three-fold purpose: 1) we would like to encourage liberal arts and business students to get interested in technology; 2) we hope that new students without mathematic backgrounds will be sufficiently attracted to science and technology that they will ultimately undertake our regular curricula; 3) these courses should serve to clarify the complexities of our technological world for anyone who chooses to undertake them.*

**01.401 Technology of Modern Architecture I** (2 cl., 2 q.h.)

The general background of architectural styles, both historical and contemporary, with emphasis on the engineering design aspects and construction procedures concerned with the various types of buildings involved. *Prereq. none.*

**01.402 Technology of Modern Architecture II** (2 cl., 2 q.h.)

Contemporary architecture, with an emphasis on the engineering design aspects and construction procedures required for modern buildings. *Prereq. none.*

**02.401 Man and Materials** (2 cl., 2 q.h.)

The consumption of earth's raw materials has increased drastically, creating serious ecological problems. Metals, plastics, ceramics, concrete, etc. evolve from substances in the earth's crust; unfortunately however, they are not properly recycled because costs have always come before environment. This course will explore what action man may taken now to prevent chaos in the future. *Prereq. none.*

**03.401 Electric Devices and Systems I** (2 cl., 2 q.h.)

A non-mathematical examination of electric and electronic devices which have become a part of daily living; analysis of functional demands and their realization in elementary working systems; ratings and applications of devices, including light, heat, and mechanical energy convertors. *Prereq. none.*

**03.402 Electric Devices and Systems II** (2 cl., 4 q.h.)

A continuation of 03.401; discussion of modern communications systems, radio, TV, telephone; economic trade-off in designs; energy sources and energy conversion, transmission systems; rate basis implications of increased load base; atomic vs. fossil fuels. *Prereq. 03.401.*

**09.401 Interpretation of Industrial Drawings** (2 cl., 2 q.h.)

Emphasis on the understanding of the concepts conveyed by working engineering drawings; practice is provided in reading and interpreting the standard conventions and symbols used to transmit the designer's ideas to the tradesman

or craftsman. No formal drafting will be done, although a few freehand sketches will be encouraged. *Prereq. none.*

**10.401 Foundations of Mathematics I** (2 cl., 2 q.h.)

The many branches of mathematics; origins of arithmetic and algebra and their place in early societies. *Prereq. none.*

**10.402 Foundations of Mathematics II** (2 cl., 2 q.h.)

Mathematics and the scientific revolution; functions, graphs, concepts of the calculus. *Prereq. 10.401.*

**10.403 Foundations of Mathematics III** (2 cl., 2 q.h.)

Mathematics today: analysis, probability, statistics, and other topics; the mutual dependence of mathematics and computers; math in social sciences, physical sciences, and business. *Prereq. 10.402.*

**11.401 Man's Physical Environment I** (2 cl., 2 q.h.)

The nature of energy; its sources and the economics of its expenditure; the harmonious interactions of natural physical systems and the conservations which govern them; man's exploitations of these laws; the cyclic nature of useful physical processes; reversible and irreversible. *Prereq. none.*

**11.402 Man's Physical Environment II** (2 cl., 2 q.h.)

The methods by which man gains knowledge of two inscrutable areas of his environment; effects of scale from astro-physical to atom; the paradoxical implications of this knowledge and its effect on man's dealings with his environment. *Prereq. none.*

## LINCOLN COLLEGE ENGINEERING TECHNOLOGY

### EVENING COURSES LISTED WITH EQUIVALENT DAY BET COURSES

| Evening Courses |  | Day BET Courses |                     |
|-----------------|--|-----------------|---------------------|
| 02.301, 02.302  | Mechanics (Statics)<br>I, II                                 | 02.411          | Mechanics A         |
| 02.303, 02.304  | Mechanics (Statics)<br>III, Mechanics<br>(Dynamics) I        | 02.412          | Mechanics B         |
| 02.305, 02.306  | Mechanics<br>(Dynamics) II, III                              | 02.413          | Mechanics C         |
| 02.321, 02.322  | Stress Analysis I, II  | 02.414          | Stress Analysis A   |
| 02.323, 02.324  | Stress Analysis III,<br>Adv. Stress Analysis I               | 02.415          | Stress Analysis B   |
| 02.325, 02.326  | Advanced Stress<br>Analysis II, III                          | 02.416          | Stress Analysis C   |
| 02.327, 02.328  | Mechanical Design,<br>I, II                                  | 02.417          | Mechanical Design A |
| 02.329          | Mechanical Design III  | 02.418          | Mechanical Design B |
| 02.351, 02.352  | Thermodynamics I, II   | 02.421          | Thermodynamics A    |
| 02.353, 02.357  | Thermodynamics III,<br>Heat Engineering<br>(Refrigeration) I | 02.422          | Thermodynamics B    |

**Evening Courses****Day BET Courses**

|                |  |        |                                      |
|----------------|--|--------|--------------------------------------|
| 02.358, 02.359 | Heat Engineering II, III                   | 02.423 | Thermodynamics C                     |
| 02.354         | Heat Transfer                              | 02.414 | Thermodynamics D                     |
| 02.355, 02.356 | Heat Transfer II, III                      | 02.425 | Thermodynamics E                     |
| 02.341, 02.342 | Materials I, II                            | 02.431 | Materials A                          |
| 02.343, 02.344 | Materials III, Applied Metallurgy I        | 02.432 | Materials B                          |
| 02.345, 02.346 | Applied Metallurgy II, III                 | 02.433 | Applied Metallurgy                   |
| 01.341, 01.342 | Fluid Mechanics I, II                      | 02.441 | Fluid Mechanics A                    |
| 01.343         | Fluid Mechanics III                        | 02.442 | Fluid Mechanics B                    |
| 02.337, 02.338 | Mechanical Vibrations I, II                | 02.451 | Mechanical Vibrations                |
| 02.334, 02.335 | Exp. Stress Analysis I, II                 | 02.452 | Experimental Stress Analysis         |
| 02.331         | Mechanical Technology Laboratory I         | 02.462 | Mechanical Technology Laboratory I   |
| 02.332         | Mechanical Technology Laboratory II        | 02.463 | Mechanical Technology Laboratory II  |
| 02.333         | Mechanical Technology Laboratory III       | 02.464 | Mechanical Technology Laboratory III |
| 02.361         | Heat Technology Laboratory I               | 02.465 | Heat Technology Laboratory I         |
| 02.362         | Heat Technology Laboratory II              | 02.466 | Heat Technology Laboratory II        |
| 03.306         | Electrical Measurements (Plus 2 q.h.)      | 03.410 | Electrical Measurements              |
| 03.320, 03.321 | Electricity & Electronics I, II            | 03.420 | Electricity & Electronics I          |
| 03.322         | Electricity & Electronics (Plus 2 q.h.)    | 03.421 | Electricity & Electronics II         |
| 11.322, 11.323 | Semiconductor Physics I, II                | 03.440 | Physical Electronics                 |
| 03.331, 03.333 | Energy Conversion I, III                   | 03.430 | Energy Conversion                    |
| 03.301, 03.302 | Circuit Theory I, II                       | 03.451 | Circuit Analysis I                   |
| 03.303, 03.304 | Circuit Theory III, IV                     | 03.452 | Circuit Analysis II                  |
| 03.361, 03.362 | Transients in Linear Systems I, II         | 03.453 | Circuit Analysis III                 |
| 03.363         | Transients in Linear Systems (Plus 2 q.h.) | 03.354 | Circuit Analysis IV                  |
| 10.324, 10.325 | Differential Equations I, II               | 03.460 | Engineering Analysis I               |

**Evening Courses**

|                |   |
|----------------|---|
| 03.371, 03.372 | Analog and Digital Computers I, II          |
| 03.377, 03.378 | Control Systems I, II                       |
| 03.379         | Control Systems III (Plus 2 q.h.)           |
| 03.397, 03.398 | Optical Instrumentation I, II               |
| 04.381, 04.383 | Nuclear Technology I, III                   |
| 09.351         | Principles of Computer Programming I        |
| 09.352         | Principles of Computer Programming II       |
| 09.353         | Principles of Computer Programming III      |
| 09.311         | Engineering Graphics I                      |
| 09.312         | Engineering Graphics II                     |
| 09.313         | Engineering Graphics III                    |
| 09.307         | Electrical & Electronic Graphics I          |
| 09.308         | Electrical & Electronic Graphics II         |
| 09.309         | Electrical & Electronic Graphics III        |
| 09.314, 09.315 | Engineering Design I, Engineering Design II |
| 10.307         | College Algebra & Trig. I                   |
| 10.308         | College Algebra & Trig. II                  |
| 10.320         | Calculus I                                  |
| 10.321, 10.322 | Calculus II, III                            |
| 10.323, 10.324 | Calculus IV, Differential Equations I       |
| 10.325, 10.326 | Differential Equations II, III              |
| 11.317         | Physics I                                   |
| 11.318         | Physics II                                  |
| 11.319         | Physics III                                 |
| 11.373         | Physics Lab. I                              |
| 11.374         | Physics Lab. II                             |
| 11.321, 11.331 | Wave Phenomena, Modern Physics              |

**Day BET Courses**

|        |                                  |
|--------|----------------------------------|
| 03.470 | Digital Computers                |
| 03.477 | Control Engineering I            |
| 03.478 | Control Engineering II           |
| 03.490 | Optical Instrumentation          |
| 04.481 | Nuclear Technology               |
| 09.421 | Principles of Computer Prog. I   |
| 09.422 | Principles of Computer Prog. II  |
| 09.423 | Principles of Computer Prog. III |
| 09.461 | Engineering Design Graphics I    |
| 09.462 | Engineering Design Graphics II   |
| 09.463 | Engineering Design Graphics III  |
| 09.461 | Engineering Design Graphics I    |
| 09.462 | Engineering Design Graphics II   |
| 09.463 | Engineering Design Graphics III  |
| 09.464 | Engineering Design Graphics IV   |
| 10.307 | College Algebra & Trig. I        |
| 10.308 | College Algebra & Trig. II       |
| 10.320 | Calculus I                       |
| 10.421 | Calculus A                       |
| 10.422 | Calculus B                       |
| 10.423 | Differential Equations           |
| 11.317 | Physics I                        |
| 11.318 | Physics II                       |
| 11.319 | Physics III                      |
| 11.373 | Physics Laboratory I             |
| 11.374 | Physics Laboratory II            |
| 11.420 | Physics IV                       |

# the lincoln college faculty

THE STRENGTH of an educational institution lies in the quality of its faculty. This is especially true in a college devoted to the training of mature men and women, many of whom are already employed in their chosen professions.

The instructional staff of Lincoln College is composed of professional academicians from Northeastern University and neighboring educational institutions and practicing professionals from the scientific and industrial community of Greater Boston. The theoretical training and practical experience represented by this combination of specialists is ideally suited to the technology programs they teach and the adult students they serve.

The faculty are selected for their ability and active interest in the welfare of ambitious part-time students. They are men and women of culture and high ideals and are qualified by educational training and professional experience to teach effectively in their respective fields.

A staff of experienced professional educators who serve as program and course consultants constitutes the Academic Advisory Council and Curriculum Advisory Committee of the College. They guide, supervise, and assist with the administration of courses and programs.

## THE FACULTY

The following is an alphabetical list of the faculty of Lincoln College; degrees earned; professional affiliation; titles and Lincoln College department (year of appointment).

Arnold M. Aaron, B.S., M.S.

Teaching Assistant, Electrical Engineering, Northeastern University.  
*Electrical Engineering Technology (1974)*

Charles D. Aaronson, B.S., M.S.

Electrical Engineering Manager for McPherson Instr. Corp.  
*Electrical Engineering Technology (1964)*

Sherif M. Abdel-Monem, B.S., M.S.

Teaching Assistant, Electrical Engineering, Northeastern University.  
*Electrical Engineering Technology (1973)*

Arnold W. Almquist, Jr., B.S., M.Ed.

Instructor of Mathematics, Needham High School.  
*Mathematics (1967)*

George H. Anderson, Commercial Art Diploma

Professional Artist; Free Lance Technical Illustrator.  
*Engineering Graphics and Computation (1956)*

Will C. Anderson, B.S., M.S.

Senior Engineer, Raytheon Corporation.  
*Engineering Graphics and Computation (1968)*

\*Robert B. Angus, Jr., B.S., M.S., P.E. (Mass.)

Service Director, Technical Education Research Centers.  
*Electrical Engineering Technology (1948)*

Victor S. Aramati, M.S., B.S.

Bell Telephone Laboratories  
*Mechanical Engineering Technology (1970)*

Nathan Aron

Engineer, Raytheon Inc.  
*Electrical Engineering (1973)*

Louis E. Ashley, A.B., M.Ed.

Product Development Section, Arthur D. Little, Inc.  
*Mechanical Engineering Technology (1966)*

Alfred E. Attard, B.S., M.A., Ph.D.

Research Associate, Northeastern University.  
*Physics (1971)*

\*Robert J. Averill, B.S., M.S.

Projects Manager, Sala Magnetics, Inc.  
*Course Consultant for Electrical Engineering Technology (1957)*

\*Russell H. Babcock, S.B., S.M., P.E. (Mass., Maine, N.H., R.I., Vt., Conn., N.Y.)

Diplomate, American Academy of Environmental Engineers;  
Chief Engineer, C. E. Maguire, Inc.  
*Civil Engineering Technology (1954)*

John C. Balsavich

Laboratory Supervisor, Electrical Engineering, Northeastern University.  
*Electrical Engineering Technology (1957)*

Westley P. Barry, BBA, Eng. & Mgt.

Vice President, McBar Associates.  
*Electrical Engineering Technology (1971)*

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\*Appointed to the rank of Senior Lecturer

- Samuel W. Bartol, B.A.  
CFI Multiengine & Instrument Ratings, Wiggins Airways.  
*Aviation (1969)*
- Adolph Baumann, B.S., P.E. (Mass.)  
Lecturer, Electronics Engineering, Northeastern University.  
*Electrical Engineering Technology (1955)*
- Fred E. Bellows, Jr., B.S., M.Ed.  
Principal, East Elementary School, Sharon.  
*Aviation Technology (1968)*
- Walter E. Benulis, B.S., M.S.  
Research Associate, M.E. Department, Northeastern University.  
*Mechanical Engineering Technology (1969)*
- Matteo P. Berardi, B.S., M.S.  
Materials Coordinator.  
*Mechanical Engineering Technology (1960)*
- Maureen P. Berggren, B.S.  
*Mathematics (1965)*
- Alfred L. Birch, B.S.E.E., P.E. (Mass.)  
Dept. Head, Development Engineering, Western Electric Co.  
*Electrical Engineering Technology (1965)*
- Emmanuel E. Bliamptis, B.S., S.M., M.A., P.E. (Mass.)  
Research Physicist, Air Force Cambridge Research Labs.  
*Physics (1965)*
- Joseph I. Bluhm, S.B., M.S., P.E. (Mass.)  
Chief Mechanics Research Laboratory,  
Army Materials and Mechanics Research Center.  
*Mechanical Engineering Technology (1966)*
- Sidney Bluhm, A.B., Ed.M., A.M.  
Head, Science Department, Boston Technical High School (Retired).  
*Physics (1965)*
- \*Edward Bobroff, B.M.E., P.E. (Mass.)  
Chief Engineer, Combat Systems, Boston Naval Shipyard (Retired).  
Electrical Engineer, United Engineers and Constructors.  
*Course Consultant for Mathematics (1946)*
- Edward J. Booth, A.B., Ed.M.  
Associate Professor of Mathematics, Northeastern University.  
*Mathematics (1956)*
- Roland J. Boucher, B.A., M.S.  
Research Physicist, Air Force Cambridge Research Lab.  
*Aviation Technology (1968)*
- James W. Bougioukas, B.S., P.E. (Mass.)  
Principal Civil Engineer Mass. D.P.W.  
*Engineering (1971)*
- \*Kenneth E. Bourque, B.S., M.S.  
*Electrical Engineering Technology (1959)*
- Alan Bradshaw, B.S., M.S.  
Chelmsford School System.  
*Mathematics (1966)*
- \*Eugene G. Branca, S.B., S.M.  
Assistant Headmaster (Retired), Hyde Park High School.  
*Mathematics (1946)*

Donald H. Breslow, S.B., M.S.

Director of Engineering, Measurement Systems Division, Itek Corp.  
*Electrical Engineering Technology (1959)*

Alfred E. Bresnahan, B.S., M.A.

Chairman, Mathematics Dept., Lynn English High School.  
*Mathematics (1967)*

Donald C. Brock, B.S., M.S.

Mathematics Instructor, Needham High School.  
*Mathematics (1965)*

Bruno Brodfeld, B.S.C.E., P.E. (Mass., La.)

Assistant Engineering Manager, Stone & Webster Engineering Corporation.  
*Civil Engineering Technology (1965)*

\*Franklyn K. Brown, B.S.Ed., M.Ed.

Associate Professor, Graphic Science, Northeastern University.  
*Course Consultant for Engineering Graphics and Computation (1955)*

William A. Brown, B.S.E.E., M.S.E.E., J.D.

Assistant Professor of Law, Suffolk University Law School.  
*Electrical Engineering Technology (1965)*

Jeffrey L. Bruce, B.S., M.A.

Instructor, Dover-Sherborn Regional High School.  
*Mathematics (1969)*

William O. Bruehl, B.S.

Associate Professor, Mechanical Engineering, Northeastern University (Retired).  
*Course Consultant for Mechanical Engineering Technology (1956)*

\*Morris H. Burakoff, B.S., P.E. (Mass.)

Department Chief, Western Electric Company.  
*Electrical Engineering Technology (1957)*

George Burdick, A.B., P.E. (Mass.)

Hudson Institute, Hudson, Mass.  
*Electrical Engineering Technology (1950)*

Ralph A. Buonopane, B.S., M.S., Ph.D.

Associate Professor of Chemical Engineering, Northeastern University.  
*Chemical Engineering Technology (1964)*

Donald Burgess, A.B., M.Ed.

Acting Headmaster, Roslindale High School.  
*Mathematics (1967)*

Steven Butcher, Jr., S.B., M.S.

Technical Staff, The Mitre Corporation.  
*Electrical Engineering Technology (1967)*

Gregory J. Cahill

Engineer, Jackson Moreland.  
*Mechanical Engineering Technology (1968)*

\*Leroy M. Cahoon, B.S.C.E., M.S., P.E. (Mass.)

Associate Professor of Civil Engineering, Northeastern University.  
*Program Consultant for Civil Engineering Technology (1962)*

John J. Callahan, B.S., M.Ed., M.A.

Assistant Professor, Boston State College.  
*Mathematics (1969)*

\*Frank R. Cangiano, B.S., Ed.M.

Instructor in Science and Mathematics, Medford High School.  
*Mathematics (1957)*

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\*Appointed to the rank of Senior Lecturer



Barry S. Canner  
Wiggins Airways  
*Aviation Technology (1970)*

Edgar T. Canty, B.S., M.S.  
Director Academic Computing Services.  
*Mathematics (1966) Babson College*

Chapin P. Carnes  
Bedford Air Force Base.  
*Physics (1974)*

\*Richard I. Carter, B.S., M.S., P.E. (Mass.)  
Associate Professor, Electrical Engineering and Director of Computation Center,  
Northeastern University.  
*Engineering Graphics and Computation (1955)*

William B. Carter  
Programming Analyst, Polaroid Corporation.  
*Engineering Graphics and Computation (1974)*

\*Walter J. Casey, A.B., M.Ed., M.A.T.  
Head of Department, Brighton High School.  
*Mathematics (1955)*

\*Walter J. Charow, B.S.E.E., M.S.E.E., P.E. (Mass.)  
Branch Chief, Avionics, Electronics System Div., U.S.A.F.  
*Electrical Engineering Technology (1955)*

Susan Chouinard  
Editor, Benwill Publishing Corporation.  
*Technical Communications (1975)*

Philip J. Clang, B.S., P.E. (Conn., Mass., Pa.)  
Project Manager, United Engineers & Constructors, Inc.  
*Mechanical Engineering Technology (1957)*

John J. Cochrane, B.S., M.S., Ph.D., P.E. (Mass.)  
Associate Professor of Civil Engineering, Northeastern University.  
*Civil Engineering Technology (1972)*

Matthew H. Cohn, B.S.  
Advanced Research Engineer, G.T.E. Sylvania.  
*Engineering Graphics and Computation (1969)*

Thomas C. Coleman, B.S.M.E., M.S.M.E.  
Engineer, United Engineering and Construction.  
*Mechanical Engineering Technology (1960)*

Donald D. Comastra  
Physicist, New England Nuclear Co.  
*Physics (1974)*

Leonard M. Conlin, A.B., Ed.M.  
Mathematics Teacher, Framingham North High School.  
*Mathematics (1967)*

Joseph V. Connolly, B.S., M.Ed.  
Head of Department, Boston Latin School.  
*Physics (1965)*

\*Roger T. Connor, A.B., M.Ed.  
Principal—Milton High School.  
*Mathematics (1953)*

- \*Robert J. Connors, B.S.  
Manager of Technology, Electronic Systems, Sylvania Electric Products, Inc.  
*Electrical Engineering Technology (1948)*
- \*Edward M. Cook, A.B., A.M.  
Professor of Mathematics, Northeastern University.  
*Program Consultant for Mathematics (1941)*
- Joseph Z. Cooper, B.S.E.  
Principal Engineer, Raytheon Company.  
*Engineering Graphics and Computation (1967)*
- Robert C. Copeland, B.S.E.E., S.M.  
WCVB-TV, Chief Meteorologist.  
*Aviation Technology (1968)*
- James B. Corscadden, B.S., M.Ed., A.M.T.  
Head of Department, South Boston High School.  
*Mathematics (1967)*
- Richard E. Cox, B.S.M.E., M.S., P.E. (Mass.)  
Professional Engineer, Technical Operations.  
*Mechanical Engineering Technology (1967)*
- David C. Crockett, B.S., M.S.  
Reliability Engineer, Raytheon Corporation.  
Graphics Instructor, Fitchburg State College.  
*Mechanical Engineering Technology (1969)*
- Thomas J. Crowley, S.B., M.S., P.E. (Mass.)  
New Product Center, Raytheon Company.  
*Mechanical Engineering Technology (1966)*
- Mukti Lal Das, B.S., M.S., Ph.D., P.E. (Mass.)  
Structural Engineer, Charles T. Main, Inc.  
*Civil Engineering Technology (1972)*
- \*Herbert R. Davenport, B.S.  
Standards Engineer, General Radio Company.  
*Electrical Engineering Technology (1948)*
- Warren C. Dean, A.B., M.A.  
Professor of Mathematics, Northeastern University.  
*Course Consultant for Mathematics (1941)*
- Dean A. De Marre, A.E., B.S., Sc.D.  
Consulting Editor, Medical Electronics & Data  
President CTR, Inc., Adjunct Professor at Indiana Northern University.  
*Electrical (1967)*
- Thomas R. Deveney, B.S.  
Curriculum Design Specialist, Copley Sq. High School.  
*Mathematics (1965)*
- Giles C. Dilg, B.S.E.E., M.S.E.E., P.E. (Mass.)  
Program Manager, Incoterm.  
*Engineering Graphics & Computation (1966)*
- Marie Dolansky, B.S., Ed.M., Ed.D., C.G.A.  
*Mathematics (1964)*
- Mark Domaszewicz, B.E.E., M.S.E.E.  
Senior Engineer, Raytheon Company.  
*Electrical Engineering Technology*

---

\*Appointed to the rank of Senior Lecturer

- Paul I. Douglas, B.S., M.S.  
Teaching Assistant, Mechanical Engineering, Northeastern University.  
*Mechanical Engineering Technology (1973)*
- Leonard F. Dow, B.S.E.E., M.S., P.E. (Mass.)  
Boston Edison Company, Staff Engineer.  
*Electrical Engineering Technology (1970)*
- Paul C. Dow, Jr., B.S., M.S.E., Ph.D.  
Program Director, Avco Corporation.  
*Electrical Engineering Technology (1973)*
- Paul A. Dunkerley, B.S., S.M., P.E. (Mass.)  
Associate Professor of Civil Engineering, Tufts University.  
*Civil Engineering Technology (1968)*
- Philip W. Dunphy, B.Sc., M.Ed.  
Associate Professor of Cooperative Education, Northeastern University.  
*Academic Counsellor (1967)*
- William V. Durante, B.S., M.Ed., M.A.  
Head of Mathematics Dept., Boston Latin School.  
*Mathematics (1964)*
- John A. Ebacher, B.S., M.S.  
Engineer, General Electric Co.  
*Mechanical Engineering Technology (1967)*
- Henry B. Eden, B.S.  
Vice President, Anco Technical Services Inc.  
*Engineering Graphics and Computation (1957)*
- Charles P. Englehardt, B.S., M. Arch.  
Architect, Corp. of Engineers.  
*Engineering Graphics & Computation (1942)*
- Adolf J. Erikson, B.B.A., M.B.A., P.E. (Mass.)  
President, A E. Engineering Corporation.  
*Engineering Graphics and Computation (1966)*
- \*Martin J. Feeney, S.B., Ed.M.  
Principal Emeritus, Boston Public Schools.  
Educational Consultant, St. Anne's School.  
*Mathematics (1957)*
- Warren G. Ferzoco, A.E., B.B.A., M.Ed.  
Dean, Cambridge High and Latin School.  
*Engineering Graphics and Computation (1966)*
- Charles Field, B.S., M.Ed.  
Professor of Cooperative Education, Northeastern University.  
*Academic Counsellor (1967)*
- Robert G. Field, S.B.E.E., M.B.A.  
*Electrical Engineering (1972)*
- \*William D. Finan, A.B., M.A., D.Ed.  
Reading Director, Needham Public Schools.  
*Course Consultant for Mathematics (1946)*
- Paul M. Fitzgerald, B.S.  
Special Hazards Engineer, Factory Mutual Research.  
*Fire Technology (1973)*
- \*Louis A. Fiore, A.E., B.B.A.  
Mech. Engineer, Design Checker, American Science and Engineering, Inc.  
*Engineering Graphics and Computation (1956)*

A. Ralph Fiore, Jr., B.S.E.E., M.S. Eng. Mgt., P.E. (Mass.)  
*Computation & Graphics (1969)*

\*Robert F. Ford, B.S.E.E., M.S.E.E.  
 Engineering Manager, Special Systems, Data General.  
*Electrical Engineering (1962)*

Earlwood T. Fortini, A.B., P.E. (Mass.)  
 Manager Graphic Products Development, Compugraphic Corp.  
*Mechanical Engineering Technology (1957)*

Robert M. Fox, A.S., B.S., M.B.A.  
 Gerber Electronics.  
*Mathematics (1969)*

\*John L. Freedman, B.S., P.E. (Mass.)  
 Instructor, Bryant & Stratton and Northeastern University.  
*Course Consultant for Electrical Engineering Technology (1949)*

Jerry M. Galatis, B.S. (2), M.Ed., O.D.  
*Physics (1965)*

Maurice Gertel  
 President, Kinetic Systems, Inc.  
*Mechanical Engineering Technology (1973)*

\*Peter D. Gianino, B.S., M.S.  
 Research Physicist, Air Force Cambridge Research Labs.  
*Mathematics (1965)*

Charles J. Glassbrenner, B.S., M.S., Ph.D.  
 Professor, Worcester State College.  
*Physics (1967)*

Sheldon L. Glickler, B.S., M.S.  
 Avco Everett Research Laboratory, Senior Scientist.  
*Civil Engineering Technology (1969)*

Fredrick M. Glock  
 Laboratory Assistant, Northeastern University.  
*Mechanical Engineering Technology (1969)*

William B. Goggins, Jr., B.S., M.S.E.E., Ph.D.  
 Chief, Advanced Radar Techniques Group,  
 Air Force Cambridge Research Laboratories.  
*Control Systems Engineering (1964)*

David Goldberg, B.S., M.S.E.E., M.S.E.M.  
 Research & Development Engineer, GTE Sylvania.  
*Engineering Graphics and Computation (1969)*

Bernard F. Goldstein, B.S., M.S., Ph.D.  
 Assistant Engineer, Cornell Aero Laboratory.  
*Electrical Engineering Technology (1974)*

Leonard M. Goodman, S.B., S.M., E.E., P.E. (Mass.)  
 Staff Member, Lincoln Laboratory, Mass. Institute of Technology.  
*Electrical Engineering Technology (1969)*

Ernest C. Greer, B.S.M.E., M.S.M.E.  
*Mechanical Engineering Technology (1970)*

\*Richard Grojean, B.S., M.S. (Physics)  
 Associate Professor, Electrical Engineering, Northeastern University.  
*Electrical Engineering (1955)*

\*Appointed to the rank of Senior Lecturer

- Forest W. Grumney, B.A., M.B.A.  
N.E.G.E.A. Service Corp.  
*Mathematics 1963*
- \*Arthur F. Gustus, B.S., M.Ed., C.A.G.S.  
Assistant Director of Science, Boston Public Schools.  
*Course Consultant for Physics (1963)*
- \*Francis R. Hankard, S.B., M.A.  
Senior Chemist, State Police Laboratories  
*Course Consultant for Physics (1946)*
- \*Joseph J. Hansen, A.B., M.B.A.  
Raytheon Co.  
*Course Consultant for Mathematics (1959)*
- \*George C. Harrison, B.S., M.S.  
Principal Electronic Engineer, Polaroid Corp.  
*Electrical Engineering Technology (1962)*
- Harold Harutunian, A.B., M.A.T., Ed.D.  
Salem State College.  
*Mathematics 1965*
- William J. Hennessy, B.S., M.B.A., B.S.E.E.  
Quality and Process Mgr., American Optical Corp.  
*Mathematics (1969)*
- Joseph I. Herzlinger, B.S., M.S., P.E. (New Jersey)  
Manager Product Design, Aerospace Systems Division R.C.A.  
*Mechanical Engineering Technology (1967)*
- Harry E. Hewes, B.S.B.A., M.Ed.  
Teacher, Boston Latin School.  
*Mathematics (1967)*
- Lewis H. Holzman, B.S.C.E., S.M.C.E., P.E. (Mass.)  
Sr. Computer Application Engr., Stone and Webster Engineering Corp.  
*Engineering Graphics and Computation (1966)*
- George K. Howe, B.S.E.E., M.Ed.  
Associate Professor Cooperative Education, Northeastern University.  
*Academic Counselor (1970)*
- Richard A. Hultin, B.S., M.S., P.E. (New York)  
Manager-Mechanical Engineering, L.F.E., Corp.  
*Mechanical Engineering Technology (1967)*
- \*Everett L. Hume, B.S., M.S., P.E. (Mass.)  
Staff, M.I.T., Draper Laboratory.  
*Civil Engineering Technology (1950)*
- Charles E. Jacob, B.S.E.E., M.S.Ed., M.L.S.  
Master, Boston Latin School.  
*Physics (1967)*
- Perry G. Jameson, B.S., M.Ed.  
Hyde Park High School, Asst. Headmaster—Mathematics.  
*Mathematics (1965)*
- Arthur W. John, B.S.E.E., M.S.  
Lecturer, Northeastern University.  
*Radiologic Technology and Commercial Aviation Technology (1968)*
- Eugene F. Joyce  
Technician, Electrical Engineering Dept., Northeastern University, U.S. Army Retired.  
*Electrical Engineering Technology (1963)*

John Kaczorowski, Jr., B.S.E.E., M.S.E.E.

Instructor, Electrical Engineering, Northeastern University.  
*Electrical Engineering Technology (1970)*

Leon Katler, Certificate P.E. (Mass., Maine, N.Y., Pa.)

Senior Structural Engineer, Stone & Webster Engineering Corporation.  
*Civil Engineering Technology (1963)*

Louis Katona, B.C.E., M.C.E., P.E. (Mass., N.Y.)

Hydraulic and Sanitary Engineer, Badger Co.  
*Civil Engineering Technology (1959)*

\*Charles W. Kaufman, B.S.Ed., Ed.M., M.N.S.

Guidance Counselor, Girls Latin School.  
*Physics (1958)*

Sidney W. Kaye, B.Sc., M.Ed.

Senior Engineer, Raytheon Co.  
*Mathematics (1967)*

Gary M. Keighley, B.S.

Director, Office of Aviation Education, Wiggins Airways.  
*Aviation Technology (1969)*

\*John T. Keiran, A.B., A.M.

Chairman of Mathematics Department, Dorchester High School.  
*Mathematics (1957)*

George F. Kent, B.S., M.S., P.E. (Mass.)

Power Engineer, Stone & Webster Engineering Corp.  
*Course Consultant for Materials*

\*Nicholas P. Kernweis, B.E.E., M.S.

Research Physicist, Air Force Cambridge Research Lab.  
*Electrical Engineering Technology (1957)*

Bernard J. Kiley, B.E., M.E., P.E. (N.H., Mass.)

Senior Structural Engineer, Stone and Webster Corporation.  
*Mechanical Engineering Technology (1958)*

Mark M. Kiley, B.E., M.E., P.E. (Mass., R.I., La., Me., Vt., N.H.)

Manager, Day and Zimmerman Associates.  
*Mechanical Engineering Technology (1955)*

Philip D. Kingman, B.S.C.E., LL.B., P.E. (Mass., N.H.), R.L.S. (Mass., Me., N.H.)

Vice President and Counsel of Security Title and Guaranty Co.  
*Civil Engineering Technology (1964)*

\*John J. Klein, B.S., M.S.

Manager, Design Engineering, Electro-optics Section, Aerospace Systems Division,  
Radio Corporation of America.  
*Electrical Engineering Technology (1950)*

Juris Krumins, B.S., M.S.

Power Engineer, Stone & Webster Engineering Corp.  
*Mechanical Engineering Technology (1966)*

\*Horatio W. Lamson, B.S., M.A., P.E. (Mass.)

Research Engineer, Emeritus, General Radio Company.  
*Electrical Engineering Technology (1945)*

\*Herbert C. Lang, B.S., P.E. (Mass.)

Manager of Employment and Training, Masoneilan International, Inc.  
*Engineering Graphics and Computation (1936)*

---

\*Appointed to the rank of Senior Lecturer

- \*Robert S. Lang, B.S., Ed.M.  
Associate Professor, Graphic Science, Northeastern University.  
*Program Consultant for Engineering Graphics and Computation (1955)*
- Philip J. Laurens, B.S., M.S.  
Physics and Biochemistry Teacher, St. Gregory High School, Dorchester, Mass.  
*Mathematics (1974)*
- \*Clarence E. LeBell, P.E. (Mass.)  
Mechanical and Electrical Engineering Senior Designer, Aircraft Gas Turbine Division,  
General Electric Company.  
*Engineering Graphics and Computation (1955)*
- Carl Leone, Jr., A.B., M.S.  
Quincy Public Schools.  
*Mathematics (1965)*
- A. Richard LeSchack, A.B., A.M.  
Consultant in Applied Mathematics and Computer Sciences.  
*Mathematics (1968)*
- See Chung Leung, B.S.  
Teaching Assistant, Mechanical Engineering, Northeastern University.  
*Mechanical Engineering Technology (1973)*
- Edward T. Lewis, B.S., M.E.E., M.B.A.  
Dept. Manager, Raytheon Co., Burlington, Mass.  
*Physics (1967)*
- Sandra M. Lictor, B.S.Ed., M.Ed.  
Instructor, Lynn English High School.  
*Mathematics (1967)*
- \*Demetre P. Ligor, B.S.E.E., P.E. (Mass.)  
President, Applied Measurements, Inc.  
*Course Consultant for Physics (1959)*
- Kenneth L. Lincoln, B.S.C.E., M.S.C.E., P.E. (Mass.)  
Senior Engineer, United Engineers and Constructors.  
*Civil Engineering (1972)*
- Warren J. Little, B.S., M.S.  
Principal Engineer, Charles Stark Draper Laboratory, Inc.  
*Physics (1966)*
- Andrew G. Lofgren, A.A., Ed.M., P.E. (Mass.)  
Design Engineer, Charles Stark Draper Laboratory, Inc.  
*Mechanical Engineering Technology (1946)*
- \*Roger G. Long, A.E., B.B.A., P.E. (Mass.)  
Senior Staff, Arthur D. Little, Inc.  
*Electrical Engineering Technology (1952)*
- Spencer P. Lookner, B.S.E.E., M.S.E.E., M.S.I.E.  
*Mathematics (1967)*
- \*Kenneth A. Lucas, B.S., M.Ed., P.E. (Mass., Conn.), R.L.S. (Mass., Conn., Maine, N.H.)  
Director, EMAPELS School of Survey.  
*Civil Engineering Technology (1950)*
- Norman J. MacDonald, B.S., M.S.  
WBZ-TV Meteorologist.  
Research Associate, Mass. Institute of Technology.  
*Aviation Technology (1974)*
- \*George H. MacMaster, B.S., M.S., P.E. (Mass.)  
Research Engineer, Raytheon Company.  
*Electrical Engineering Technology (1968)*

- \*Alvin Mandell, B.E.E., M.S.E.E., P.E. (Mass.)  
Program Management, Raytheon Missile Systems Division.  
*Electrical Engineering Technology (1950)*
- Jack I. Mann., B.S.C.E., M.S., P.E. (Mass., Conn., Pa., Vt., Wyoming)  
Chief Engineer, General Engineering, United Eng. & Constr. Inc.  
*Mechanical Engineering Technology (1960)*
- Anthony Martinez III, B.S., M.S.  
Air Force Cambridge Research Laboratory.  
*Electrical Engineering Technology (1973)*
- Anton Mavretic, B.S., M.S., Ph.D.  
Staff Member, Massachusetts Institute of Technology.  
*Electrical Engineering Technology (1969)*
- Richard F. McBrien, B.S.  
Vice-Principal, Lynn Eastern Jr. High School.  
*Physics (1967)*
- \*Edward McCarren, Jr., A.E.  
Engineer, Bell and Howell Comm. Co.  
*Electrical Engineering Technology (1951)*
- Carl J. Mellea, S.B., M.S., P.E. (Mass., R.I., Maine, Vt., N.H.)  
Project Engineer, Howard, Needles, Tammen & Bergendorff.  
*Civil Engineering Technology (1960)*
- Walter Messcher, B.M.E., M.S.  
Engineer, Department of Transportation.  
*Course Consultant for Engineering Graphics and Computation (1966)*
- Richard W. Miller, B.S., M.S., P.E. (Mass.)  
Manager, Flow Engineering Dept., The Foxboro Co.  
*Mechanical Engineering Technology (1959)*
- \*Ernest E. Mills, B.S., M.S., P.E. (Mass.)  
Associate Professor of Mechanical Engineering, Northeastern University.  
*Program Consultant for Mechanical Engineering Technology  
Day and Evening Programs (1947)*
- Edmund J. Mitchell, B.S.E.E., M.S.E.E.  
Technical Staff, Radio Corporation of America, Burlington, Mass.  
*Electrical Engineering Technology (1967)*
- David D. Moore  
Teacher, Pentucket Regional High School.  
*Mathematics (1971)*
- Louis A. Moore, A.E., B.E.T., R.L.S. (Mass.)  
*Civil Engineering Technology (1972)*
- Martin C. Murphy, B.S.C.E., P.E. (Mass.)  
Principal, Haley & Aldrich, Inc.  
*Civil Engineering Technology (1972)*
- Louis J. Nardone, B.S., M.S., P.E. (Mass.)  
Associate Professor, Electrical Engineering, Northeastern University.  
*Program Consultant for Electrical Engineering  
Day and Evening Programs (1973)*
- Robert L. Norton, A.S., B.S., M.S.  
Asst. Prof., Engineering Design, Tufts University.  
*Graphics & Computation (1967)*



- \*John R. O'Brien, A.B., A.M.  
Headmaster Emeritus, Dorchester High School.  
*Mathematics (1946)*
- John C. O'Callahan  
Engineer, McPherson Associates, Inc.  
*Mechanical Engineering Technology (1961)*
- Ray O. Oglesby, B.S.Ed., B.S.Ed.  
Teacher, Weeks Junior High School.  
*Mathematics (1967)*
- Yesugey Oktay, B.S., M.S., P.E. (Mass., N.Y., Cal., Ma., Ind.)  
Senior Civil Engineer, The Badger Co., Inc.  
*Civil Engineering Technology (1970)*
- Carl A. Olson, Jr., B.S., Ed.M.  
Department Head, Wellesley High School.  
*Engineering Graphics and Computation (1964)*
- \*Thomas J. Owens, A.B., M.Ed.  
Instructor in Mathematics, Quincy High School.  
*Mathematics (1952)*
- Burton S. Parker, B.S., P.E. (Mass.)  
Mechanical Engineer, Army Materials and Mechanics Research Center.  
*Mechanical Engineering Technology (1963)*
- \*William H. Parmenter, A.E., B.B.A.  
Instructor, Newton North High School.  
*Electrical Engineering Technology (1952)*
- Richard W. Peterson, B.S., M.S.  
Radiochemist, New England Nuclear Corporation.  
*Physics (1968)*
- Peter J. Philliou, B.S., Eng., M.S. Math, M.S. Mgt., M.S. Astronautics  
*Mathematics (1967)*
- Dominic A. Piccione, B.S., M.S.  
Engineer, Stone and Webster Co.  
*Mechanical Engineering Technology (1966)*
- \*Norman C. Poirier, B.S., M.S., P.E. (Mass.)  
Research Associate, Northeastern University.  
*Electrical Engineering Technology (1966)*
- Donald J. Poulin, A.E., B.S.I.T., P.E. (Mass.)  
Associate Engineer, Western Electric Company.  
*Electrical Engineering Technology (1970)*
- Daniel W. Pratt, B.S., M.S.  
Math Dept., Boston Latin School.  
*Mathematics (1967)*
- \*Charles H. Price, Jr., B.S., M.S.  
Principal Engineer, Digital Equipment Corporation.  
*Electrical Engineering Technology (1960)*
- William B. Pronk  
Chief Flight Instructor—Wiggins Airways.  
*Aviation Technology (1972)*
- \*Sidney F. Quint, S.B., S.M., P.E. (Mass.)  
Systems Engineer, Raytheon Data Systems.  
*Electrical Engineering Technology (1954)*
- \*Gerald H. Ratcliffe, A.B.  
Ratcliffe Marine Design.  
*Electrical Engineering Technology (1955)*

- Bernard C. Reddy, B.S., M.Ed.  
Teacher of Science, Blue Hills Technical High School.  
*Course Consultant for Physics (1965)*
- James F. Regan, B.S.C.E., P.E. (Mass.)  
Chief Design Engineer and Associate of Kennedy, Kennedy, Keefe, and Carney.  
*Civil Engineering Technology (1972)*
- \*Edward L. Rich, B.S., M.S., P.E. (Mass.)  
Principal Engineer, Raytheon Company.  
*Mechanical Engineering Technology (1956)*
- William Richmond, B.S., Ed.M.  
Physics Instructor, Everett High School.  
*Mathematics (1964)*
- Bertram Rockower, B.S., M.S., P.E. (Mass.)  
Staff Engineer, Draper Laboratory.  
*Mechanical Engineering Technology (1967)*
- Eric A. Roy, B.A., M.Ed., M.A.  
Copley Sq. High School Instructor.  
*Mathematics (1967)*
- Thomas E. Ruden, B.S., M.S.  
President, Microwave Power Technology Company.  
*Physics (1967)*
- \*Ernest J. Ryan, A.B., M.S.  
South Boston High School.  
*Mathematics (1959)*
- \*Thaddeus Sadowski, S.B., Ed.M.  
North Quincy High School.  
*Mathematics (1958)*
- Leo D. Salvucci, A.B., M.Ed., M.S.T.  
Master, Boston Latin School.  
*Mathematics (1965)*
- Richard P. Samuels, B.E.E., M.S.I.M., P.E. (Mass.)  
New England Tel. & Tel.  
*Mathematics (1970)*
- Alan Schoenegge, B. Arch.  
Associate Architect, Childs, Bertman, Tseckares Assoc. Inc.  
*Civil Engineering Technology (1974)*
- \*Henry Schwartz, A.B., M.Ed., P.E. (Mass.)  
Field Engineer, CA-PRA Inc.  
*Physics (1958)*
- \*Robert I. Serody, S.B.E.E., M.S.E.E., P.E. (Mass.)  
Project Engineer, Raytheon Co.  
*Electrical Engineering Technology (1967)*
- Ralph W. Sexton, B.S., M.S., P.E. (Mass., N.H.)  
Associate Professor of Mechanical Engineering, Northeastern University.  
*Mechanical Engineering Technology (1966)*
- Harold M. Sharaf, B.S., M.S., P.E. (Mass.)  
General Manager, Titan Transformer Co.  
*Course Consultant for Electrical Engineering Technology (1955)*
- Irwin Shear, A.B., M.S.  
Special Projects Manager, Raytheon Co., Equipment Div.  
*Engineering Graphics and Computation (1967)*

---

\*Appointed to the rank of Senior Lecturer

Walter S. Shields, B.S., Ed.M., M.S.

Administrative Assistant to Director of Math, Needham Public Schools.  
*Mathematics (1966)*

Bernard Sidman, B.A., M.Ed., M.A., Ed.D.

Mathematics Curriculum Coordinator, Beverly Public Schools.  
*Mathematics (1968)*

Charles Siegel, A.B., M.A.

Instructor of Mathematics, Needham Senior High School.  
*Mathematics (1967)*

John M. Slepetz, B.C.E., M.C.E., Ph.D., P.E. (Va.)

Research Civil Engineer, U.S. Army Materials and Mechanics Research Center.  
*Mechanical Engineering Technology (1970)*

Malcolm V. Smith, B.S.

New England Mutual Life Insurance Co.  
*Mathematics (1959)*

Roderic W. Sommers, B.S., M.Ed.

Associate Professor of Cooperative Education, Northeastern University.  
*Academic Counsellor (1969)*

S. Leonard Spitz, B.S., M.S., P.E. (Mass.)

Program Manager, Raytheon Corp.  
*Mechanical Engineering Technology (1955)*

Richard E. Sprague, B.B.A., B.S.C.E., M.B.A., Ed.M.

Assistant to the Dean, Department of Cooperative Education, Northeastern University.  
*Academic Counsellor (1967)*

Benjamin R. Stahl, A.B.

Senior Systems Analyst, Raytheon Data Systems Company.  
*Engineering Graphics and Computation (1966)*

Joseph E. Steffano, B.S., M.S., M.B.A., P.E. (Mass., Vt., N.H., Conn., Me., R.I., N.Y., Pa.)

R.L.S. (Mass., Conn., N.H., Me., R.I., Vt.)  
Senior Structural Engineer, Stone & Webster Engineering Corporation.  
*Civil Engineering Technology (1965)*

Robert B. Stitt, B.B.A., M.B.A.

Division Manager, Startronics Connectors, Division of Arco Electronics Inc.  
*Electrical Engineering Technology (1960)*

M. Carlton Storms, B.A., M.Ed.

Teacher, Braintree High School.  
*Physics (1967)*

\*Raimundas Sukys, B.S., M.S.

Senior Research Associate in Electrical Engineering, Northeastern University.  
*Electrical Engineering Technology (1962)*

Paul J. Sevigny, A.E., B.S., M.B.A.

Research Associate in Mechanical Engineering, Northeastern University.  
*Mechanical Engineering Technology (1969)*

Laurence R. Swain, Jr., B.S., M.S.

Manager, Product Development, Adage, Inc.  
*Physics (1961)*

Dexter E. Swift, B.S., M.Ed.

Teacher, City of Lynn.  
*Physics (1968)*

Jason R. Taylor, B.S., M.S.

Editor of Wang Laboratories PROGRAMMER Magazine &  
Executive Director of SWAP Users Society.  
*Mathematics (1966)*

Maurice Temple, B.S., M.Ed., M.S.

Associate Professor of Physical Science, Boston State College.  
*Mathematics (1956)*

\*Phineas Tobe, A.B., Ed.M.

Head of Science Department, Girls' Latin School.  
*Physics (1960)*

Melvin W. Tracey, B.S., S.M.

Staff Aeronautical Engineer, Itek Corporation.  
*Mechanical Engineering Technology (1968)*

\*John S. Travia, B.S.E.E., M.S.E.E., M.S.E.M., P.E. (Mass.)

Senior Engineer, Raytheon Company.  
*Electrical Engineering Technology (1965)*

Paul A. Tuck, B.S.E.E., M.S.

*Electrical Engineering Technology (1971)*

Leendert J. K. Van Opinjen, B.S., M.S.

Project Engineer, Teradyne, Inc.  
*Mechanical Engineering Technology (1973)*

Thomas J. Vaughn, Jr., B.S.

Engineer, Stone and Webster Co.  
*Engineering Graphics and Computation (1972)*

John F. Videler, B.S., M.S.

Operations Engineer, General Electric Co.  
*Physics (1968)*

\*Arthur M. Vuilleumier

Head of Electronics Department, Blue Hills Regional Vocation Technical High School.  
*Electrical Engineering Technology (1953)*

Richard Wadler, A.E., P.E. (Mass.)

Senior Mechanical Engineer, Raytheon Company, Missile and Space Division.  
*Mechanical Engineering Technology (1953)*

\*Thomas H. Wallace, S.B., M.A., Ph.D.

Professor of Physics, Northeastern University.  
*Program Consultant for Physics (1941)*

Robert M. Walters, B.S., M.S. (ME), NAV.E., MCE, Ph.D.

Lieutenant Commander, U.S.N., Naval Engineer.  
*Physics (1968)*

\*Morton D. Weinert, A.B., Ed.M., M.Ed.

Assistant Headmaster in Charge of Mathematics, Boston Latin School.  
*Mathematics (1955)*

\*Ralph A. Wellings, B.S., Ed.M.

Mathematics Instructor, Boston Latin School.  
*Mathematics (1955)*

\*Ralph E. Wellings, A.B., A.M., Ed.M.

Head of Science Department, Brighton High School (Retired).  
*Mathematics (1944)*

Charles S. Whalen, B.S.M.E., M.S.M.E., P.E. (Mass.)

Research & Development Engineer, Inertial Guidance, Raytheon Company.  
*Mechanical Engineering Technology (1968)*

\*Thomas F. White, B.S., B.S.M.E.E., M.Ed., M.A.

Coordinator of Mathematics K-14, Quincy Public Schools.  
*Mathematics (1957)*

\*Appointed to the rank of Senior Lecturer

- \*Willard B. Whittemore, B.S., in C.E., Ed.M., C.A.G.S.  
 Director of Mathematics, Everett Public Schools (Retired).  
*Course Consultant for Mathematics (1957)*
  
- \*Joseph F. Willard, B.S., P.E. (Mass.), R.L.S. (Mass.)  
 Supervising Civil Computer Engineer, Data Processing Section,  
 Massachusetts Department of Public Works.  
*Civil Engineering Technology (1949)*
  
- \*Donald K. Willim, B.S., M.S., P.E. (Mass.)  
 Staff, Massachusetts Institute of Technology, Lincoln Laboratory.  
*Physics (1961)*
  
- \*Albert G. Wilson, Jr., B.S., M.S., P.E. (Mass.), S.E. (Ill.)  
 Member Gilbert Small & Company, Consulting Engineers.  
*Course Consultant for Mechanical Engineering Technology (1948)*
  
- Kenneth S. Woodward, B.S., M.E.  
 Associate Professor, Graphic Science, Northeastern University.  
 Director, Aviation Technology-Lincoln College.  
*Academic Counsellor (1967)*
  
- Elliot Wyner, B.S., M.S., Ph.D.  
 Physicist, United States Army Natick Laboratory.  
*Physics (1973)*
  
- Walter Zagieboylo, M.S., M.E., P.E. (Mass.)  
 Research Engineer, U.S. Army Natick Labs.  
*Mathematics (1969)*
  
- Walter P. Zanor, B.S.B.A.  
 Instructor, Everett High School.  
*Mathematics (1967)*

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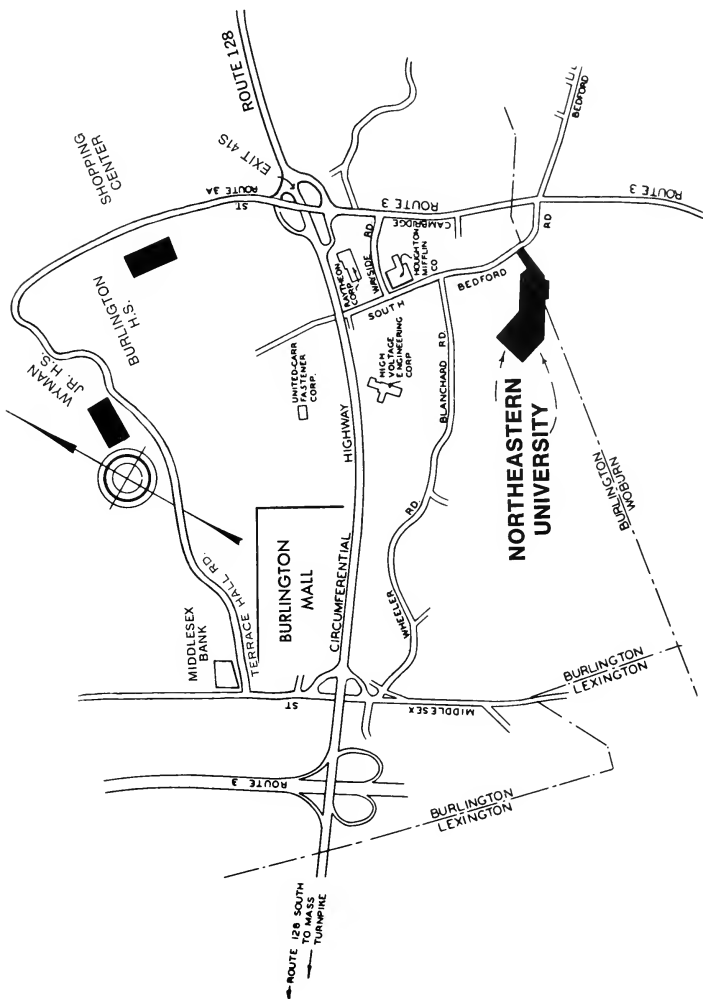
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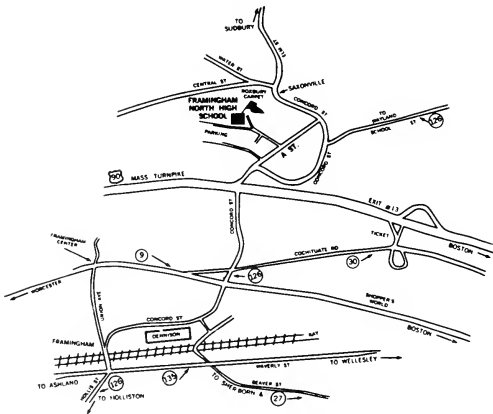
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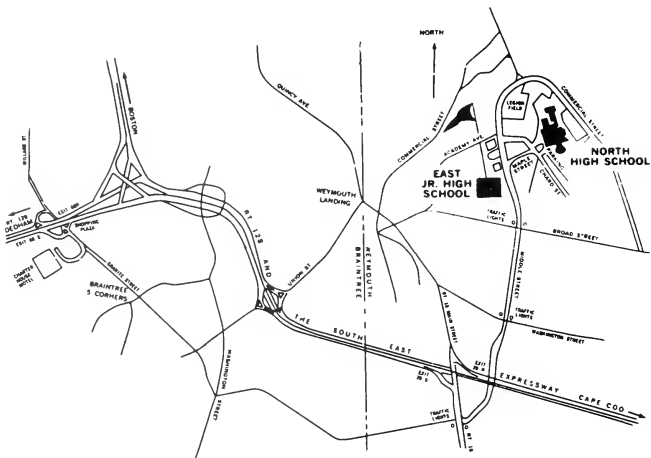
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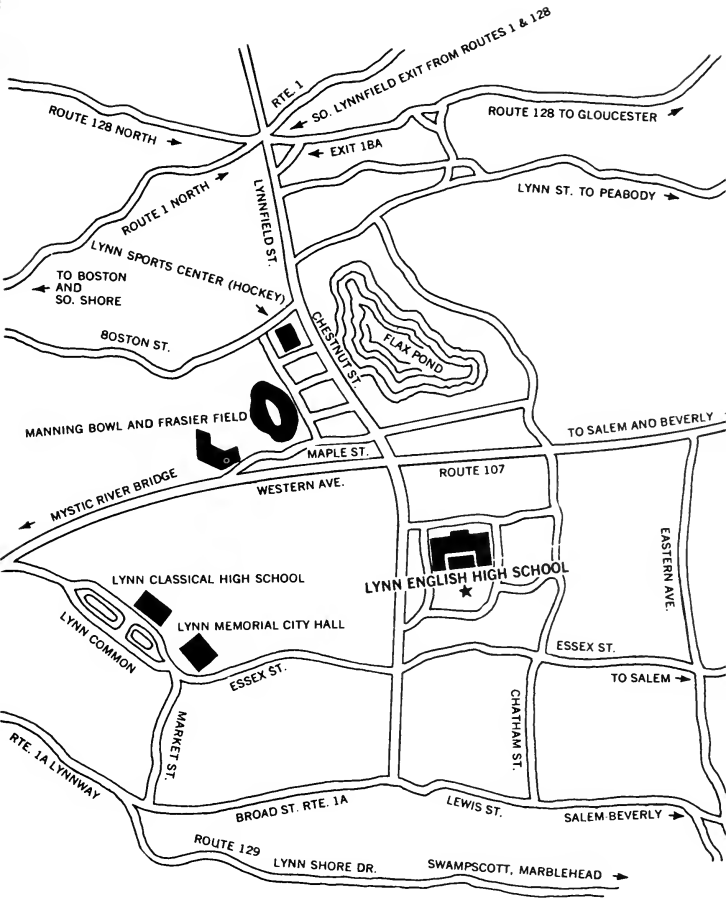


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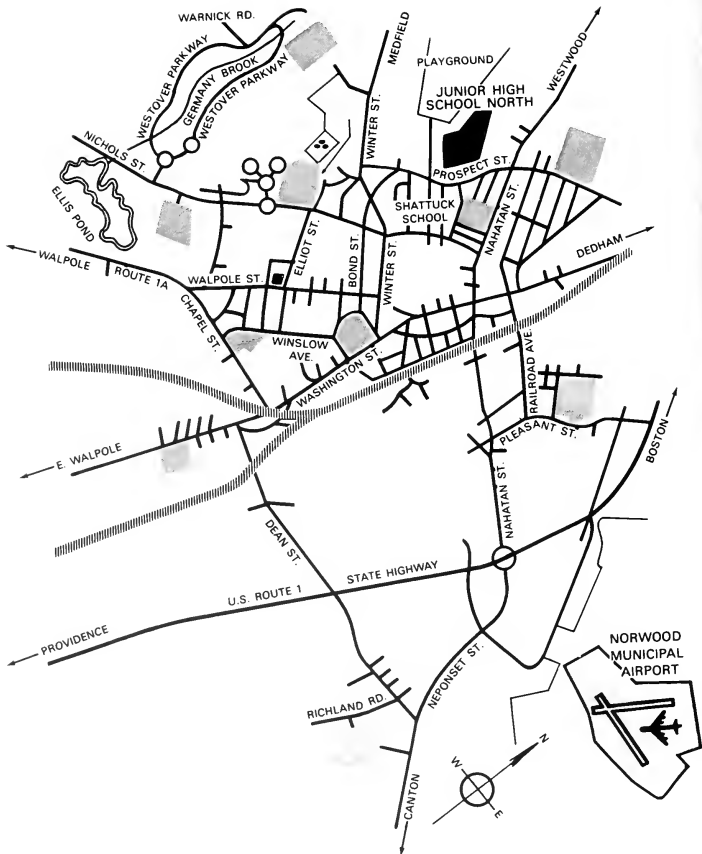


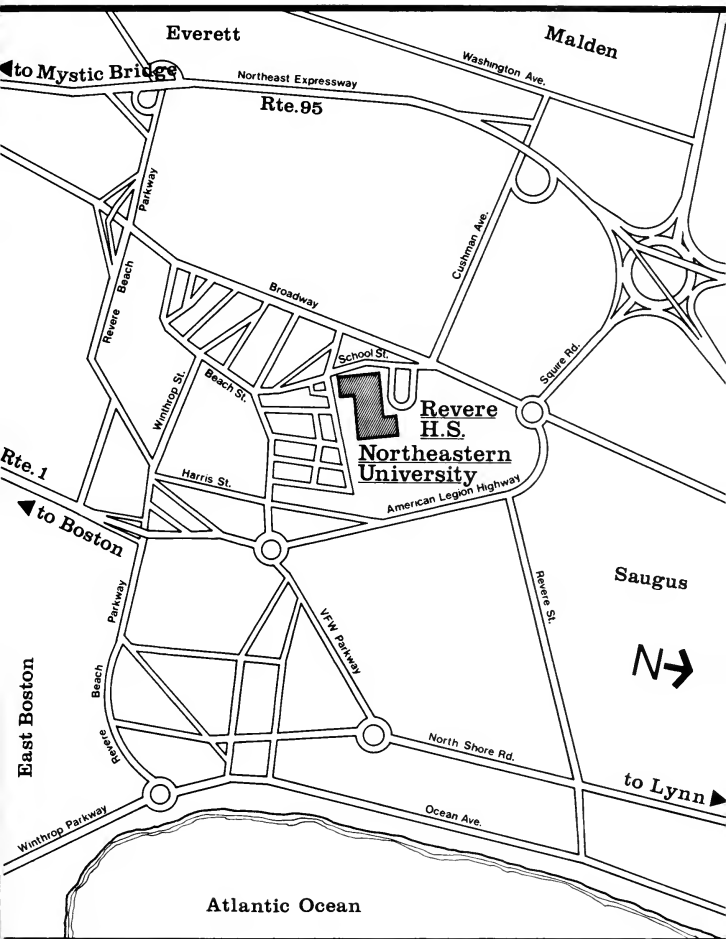


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# Norwood





Everett

Malden

to Mystic Bridge

Northeast Expressway

Rte. 95

Washington Ave.

Parkway

Revere Beach

Broadway

Cushman Ave.

Squire Rd.

School St.

Winthrop St.

Beach St.

Harris St.

Rte. 1

to Boston

Parkway

Beach

Revere

Winthrop Parkway

VFW Parkway

Revere St.

Saugus

N

North Shore Rd.

to Lynn

Ocean Ave.

Atlantic Ocean

East Boston

Revere  
H.S.  
Northeastern  
University

American Legion Highway

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